

# Service Manual

## and Technical Guide

AUTO-LOGIC™

EASA-PHONE®



Integrated  
Telephone System

Telephone Equipment

# KX-T2432-1

# KX-T2429-1

1. Please use this manual together with the service manual for model No. KX-T2432 (order No. KM48801612C1).
2. Please use this manual together with the technical guide for model No. KX-T2430/2432 (order No. KM48801281G1).
3. This Service Manual indicates the main differences between; Original KX-T2432/2429 and KX-T2432-1/2429-1.

**Panasonic EASA-PHONE** ①  
MODEL NO. KX-T2432  
TELEPHONE EQUIPMENT  
POWER SOURCE  
DC IN 12V (USE Panasonic AC ADAPTOR  
KX-A11 ONLY.)  
Matsushita Electric Industrial Co., Ltd. Made in Japan  
Complies With Part 68, FCC Rules  
FCC Registration Number ACJ96N-19719-MT-E  
Ringer Equivalence 1.0B

(Model KX-T2432-1)

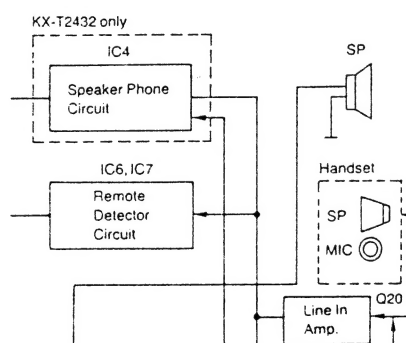
**Panasonic EASA-PHONE** ①  
MODEL NO. KX-T2429  
TELEPHONE EQUIPMENT  
POWER SOURCE  
DC IN 12V (USE Panasonic AC ADAPTOR  
KX-A11 ONLY.)  
Matsushita Electric Industrial Co., Ltd. Made in Japan  
Complies With Part 68, FCC Rules  
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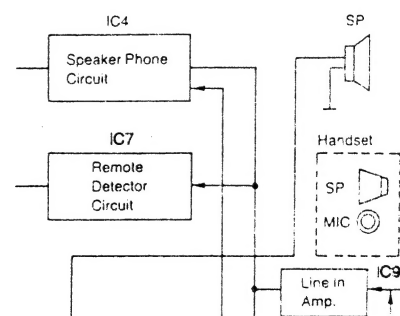
1. The model KX-T2432-1/2429-1, have a mark ① behind the Model No. of the name plate shown in figure at the left as indicated.
2. There are 2 types of model KX-T2432/2429, such as KX-T2432/2429 and the KX-T2432-1/2429-1.
3. Please use this manual for model KX-T2432-1/2429-1.

## CHANGES

### ■ BLOCK DIAGRAM (Page 2)



(Model KX-T2432/2429)



(Model KX-T2432-1/2429-1)

# Panasonic

Matsushita Services Company  
50 Meadowland Parkway  
Secaucus, New Jersey 07094

Panasonic Hawaii Inc.  
99-859 Iwaiwa Street  
P.O. Box 774  
Honolulu, Hawaii 96808-0774

Matsushita Electric  
of Canada Limited  
5770 Ampler Drive, Mississauga,  
Ontario, L4W 2T3

Panasonic Sales Company,  
Division of Matsushita Electric  
of Puerto Rico, Inc.  
San Gabriel Industrial Park  
65th Infantry Ave., Km 9.5  
Carolina, Puerto Rico 00930

# TECHNICAL GUIDE

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These contents are common use with the Technical Guide of model KX-T2430/2432 (order No. KM48801281G1).

## SPEECH SYNTHESIS SIGNAL CIRCUIT (Page 3)

IC5, IC6: Speech synthesis IC→IC5: Controller+Internal ROM  
IC6: External ROM

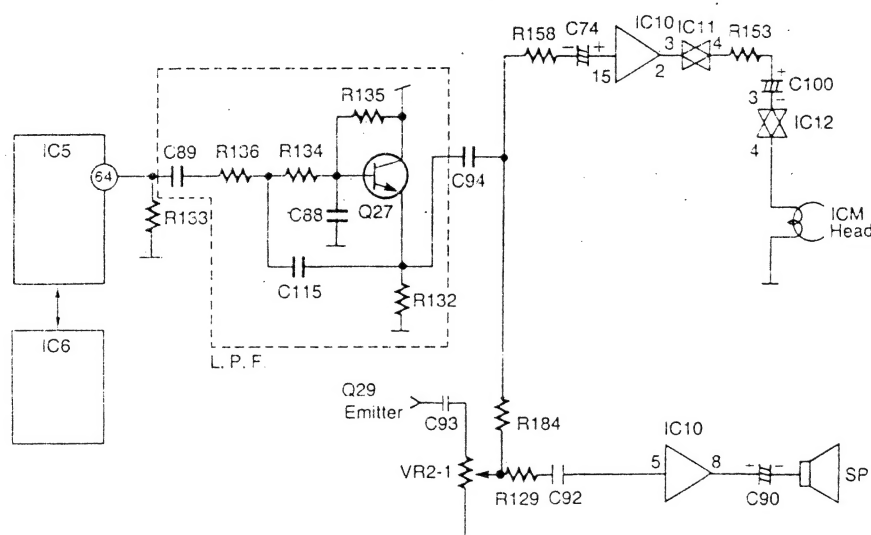
### 1 Audio speaker monitor source

In the figure below, the audio signal from Pin ⑥ of IC5 takes the following path to monitoring speaker.  
IC5 ⑥→C89→Q27→C94→R184→R129→C92→IC10 ⑤→IC10 ⑧→C90→Speaker.

### 2 Audio Record Signal source

IC5 ⑥→C89→Q27→C94→R158→C74→IC10 ⑮→IC10 ②→IC11 ③→IC11 ④→R153→C100→IC12  
③→IC12 ④→ICM Head.

Circuit Diagram



## DISPLAY CIRCUIT (Page 4)

### Circuit Operation:

IC13 drives the LCD and communicates data via the ports of IC7 ⑨, ⑩, ⑪ and ⑫, which also detects the LCD indication and announce key input.

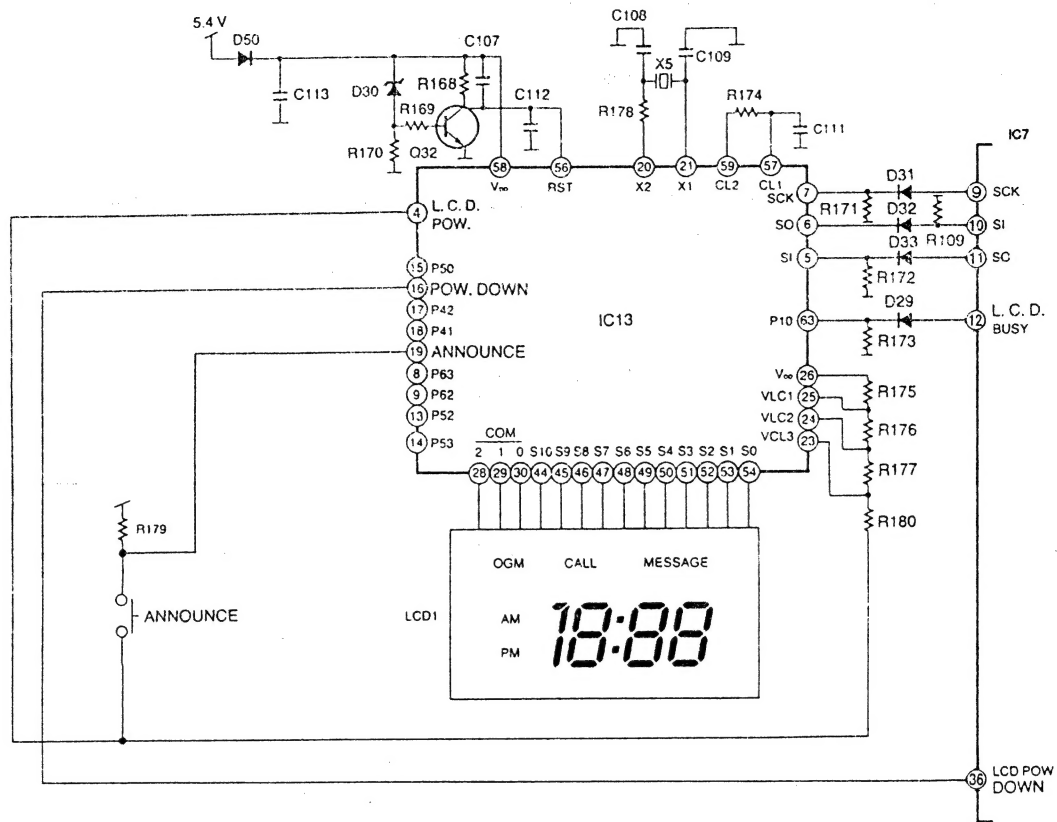
When the voltage for the LCD indication will be produced through R180, R177, R176 and R175.

$$V_{dd} = V_{dd}, \text{VLC1} = \frac{(V_{dd} - \text{VLC3})^2}{3}, \text{VLC2} = \frac{1}{3} (V_{dd} - \text{VLC3})$$

V<sub>dd</sub>-VLC3=5V the voltage of 5V will be provided to the LCD.

There are system oscillation consisting of R174, C111 and clock oscillation consisting of X5, C108 and C109 in the IC13. Although both oscillators usually work when the Power Down is H, during the power failure Power Down port ⑩ goes L by IC7 ⑩ and it goes to the standby mode, and then clock oscillation only works. At that time, IC13 is backed up at C113. When V<sub>dd</sub> goes under 3V, Q32 Becomes off and the unit will be reset.

## Circuit Diagram

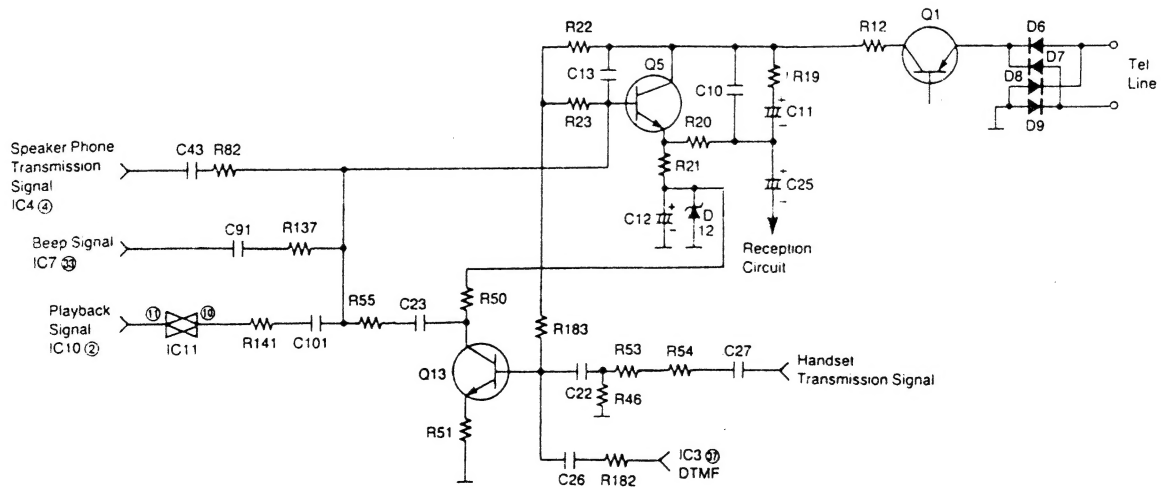


## ■ LINE OUTPUT CIRCUIT (Page 7)

Each signals are sent to the telephone line as follows.

- (Beep Tone) IC7 ③③→C91→R137→
  - (Tape Playback Signal) IC10 ②→IC11 ⑪⑩→R141→C101→
  - (Speaker Phone Transmission Signal) IC4 ④→C43→R82→
  - (Handset Transmission Signal) Handset Mic→C27→R54→R53→C22→Q13→C23→R55→Q5 base
  - (DTMF, Hold Tone) IC3 ③⑦→R182→C26→
- Q5 collector→R12→Q1→D6~D9→Telephone Line

## Circuit Diagram



## ■ RING DETECTOR CIRCUIT (Page 8)

### Function:

This circuit activates the CPU to respond to the ring signal from the telephone line during the ANSWER mode of operation.

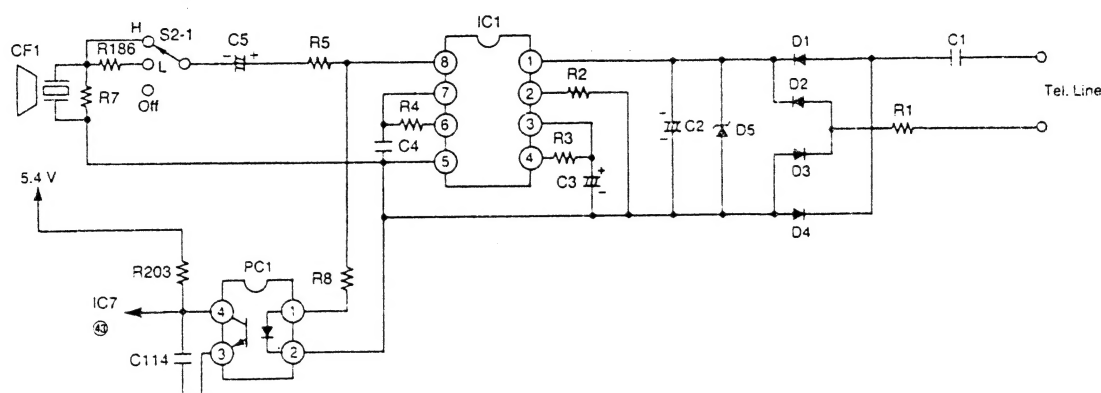
### Circuit Operation:

When a Ring Signal is inputted from the telephone line, a tone (ring signal) will be outputted from IC1 ⑧. (See telephone line interface.)

This signal flows through R8→PC1 ①→PC1 ②, hence photocoupler PC1 ④-③ will turn ON.

As a result, IC7 ④ goes Low, indicating that Ring Signal was input.

### Circuit Diagram



## ■ VOX CIRCUIT (Page 14)

### Function:

The VOX circuit is designed to detect cyclic signals in which the signal is ON for 100 msec. to 1 sec, continuous sounds and no sound at all.

After detection, the CPU issues an instruction that makes VOX operation possible.

This means that when a telephone call has ended, the phone is reset and is ready to receive the next call.

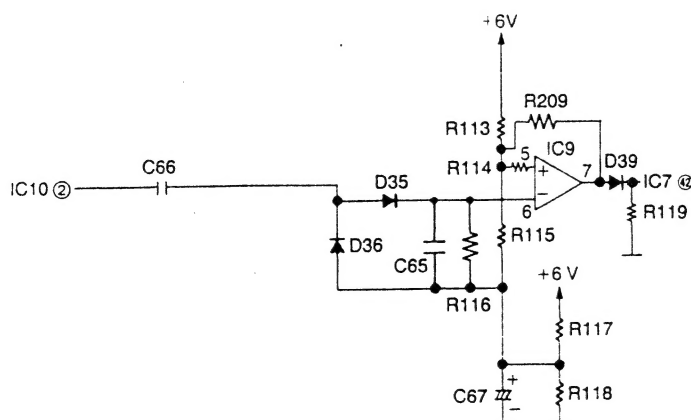
### Circuit Operation:

A signal output from terminal ② of IC10 passes through C66, then it is rectified by C65, R116, D35 and D36 and inputted to the comparator which consists of IC9 pin ⑦, R113, R115, R114 and R209.

The output ⑦ from IC9 is inputted to ④ of the CPU (IC7).

When sound is present its output at IC9 pin ⑦ becomes a low level, while with no-sound its output becomes a high level.

### Circuit Diagram





## ■ REMOTE SIGNAL DETECTOR CIRCUIT (Page 15)

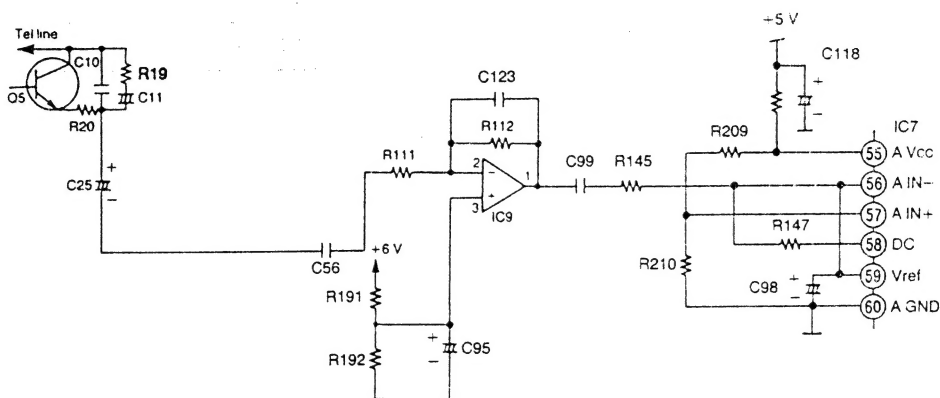
### Circuit Operation:

A remote control signal is used with the dual-tone multiple-frequency (DTMF) signal.

The remote signal output from the telephone line via Q5 and C25. And it is inputted to pin ⑤⑥ of IC7 passes through the amplifier (IC9, R112, R111), via C56.

The DTMF signal is inputted to pin ⑤⑥ of IC7.

### Circuit Diagram



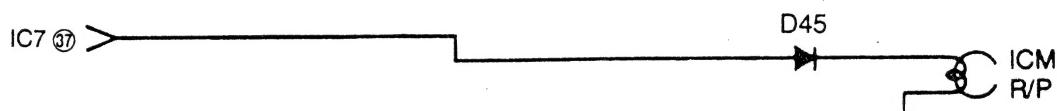
## ■ QUICK ERASE CIRCUIT (Page 15)

### Circuit Operation:

When the Erase Switch is turned on, DC current flows as follows;

IC7 ③⑦ (High level) → D45 → ICM R/P Head

### Circuit Diagram



## ■ CPC (CALLING PARTY CONTROL) DETECTOR CIRCUIT (Page 17)

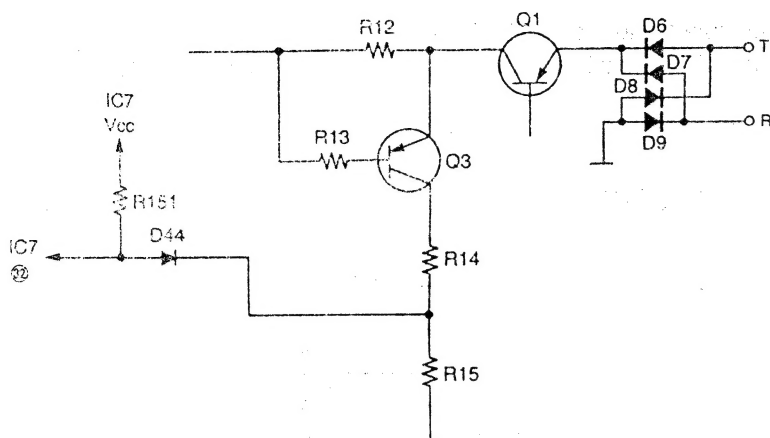
### Function:

The CPC DETECTOR complements the units shut off, in the ANSWER mode, after the caller hangs up. At this times, the CPC DETECTOR takes over. The CPC DETECTOR senses the temporary disconnection the telephone line which occurs after the caller hangs up.

### Circuit Operation:

When the unit seizes a line, current will flow through D6~D9, Q1 and R12. As a result, voltage will be applied across both ends of R12, causing current to flow to the base of Q3 via R13, and Q3 will turn ON. Consequently, voltage will be applied across both ends of R15 and R14. As a result, IC7 pin ③② will go High through D44. If then the line is momentarily cut, line current will cease to flow, and voltage will no longer be applied across R12, thus and Q3 will turn OFF. IC7 pin ③② will go Low, hence this condition will be detected.

## Circuit Diagram



CPC

	A	B
OK	more than 8 ms	more than 600 ms
NG	less than 5 ms	less than 350 ms

## ■ SPEAKERPHONE CIRCUIT (Page 18)

### Function:

This circuit controls the automatic switching of the transmitted and received signals, to and from the telephone line, when the unit is used in the hands-free mode.

### Circuit Operation:

The Speakerphone can only provide a one-way communication path.

In other words, it can either transmit an outgoing signal or receive an incoming signal at a given time, but cannot do both simultaneously. Therefore, a switching circuit is necessary to control the flow of the outgoing and incoming signals. This switching circuit is contained in IC4 and consists of Voice Detector, Tx Attenuator, Rx Attenuator, Comparator and Attenuator Control. The circuit analyzes whether the Tx (transmit) or the Rx (receiver) signal is louder, and then it processes the signals such that the louder signal is given precedence.

The Voice Detector provides a DC input to the Attenuator Control corresponding to the Tx signal. The Comparator receives a Tx and Rx signal, and supplies a DC input to the Attenuator Control corresponding to the Rx signal. The Attenuator Control provides a control signal to the Tx and the Rx Attenuator to switch the appropriate signals on and off. The Attenuator Control also detects the level of the volume control to automatically adjust for changing ambient conditions.

### 1) Transmission Signal Path

The input signal from the microphone is sent through the circuit via the following path:

- Mic → pin ⑨ of IC4 → pin ⑩ of IC4 → pin ③ of IC4 → pin ④ of IC4 → R82 → C43 → interface (Q5) → telephone line.

### Reception Signal Path

Signals received from the telephone line are outputted at the speaker via the following path:

- telephone line → interface (Q5) → receive amp (IC9) → pin ②⑦ of IC4 → pin ②⑥ of IC4 → pin ①⑨ of IC4 → pin ①⑤ of IC4 → pin ⑤ of IC10 → pin ⑧ of IC10 (power amp) → speaker.

### 2) Control Signal Path

Control signals for transmission and reception are inputted to IC4 via the following path:

(Transmission Control Signal Path)

- Mic → pin ⑨ of IC4 → pin ⑩ of IC4 → pin ③ of IC4 → pin ④ of IC4 → pin ⑤ of IC4.

(Reception Control Signal Path)

- telephone line → Interface (Q5) → receive amp (IC9) → pin ⑦ of IC4.

### 3) Transmission/Reception Switching

The comparison result between Tx and Rx outputs as a DC level of IC4 pin ②③.

Tx level is high...pin ②③=pin ②④—6 mV

Rx level is high...pin ②③=pin ②④—150 mV

Comparator output is connected to the attenuator control inside of IC4.

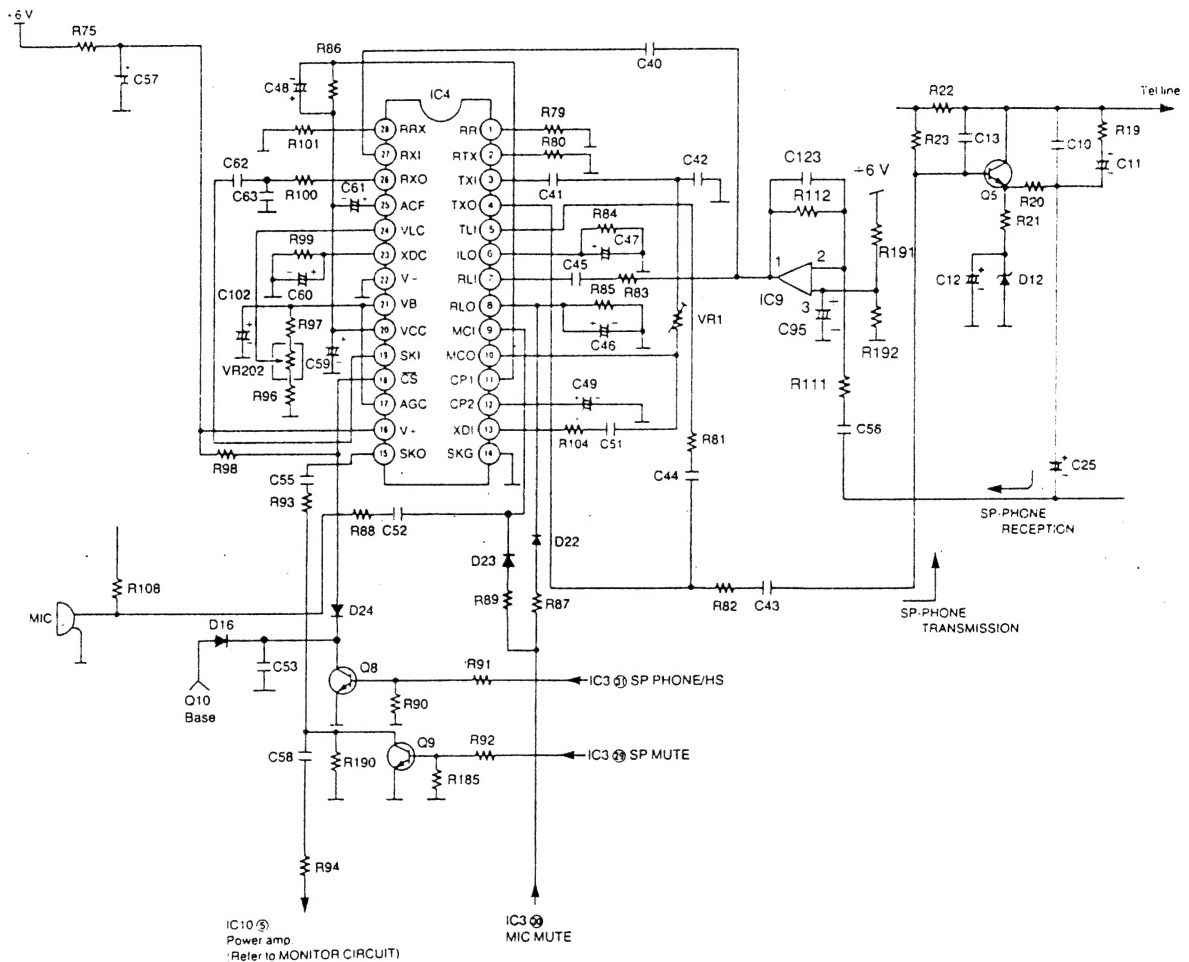
### 4) Voice Detector

The output of the mic amp (pin ⑩ of IC4) is supplied to pin ⑬ of IC4 as a control signal for the voice detector.

### 5) Attenuator Control

The attenuator control detects the setting of the volume control through pin ②④ of IC4 to automatically adjust for changing ambient conditions.

## Circuit Diagram

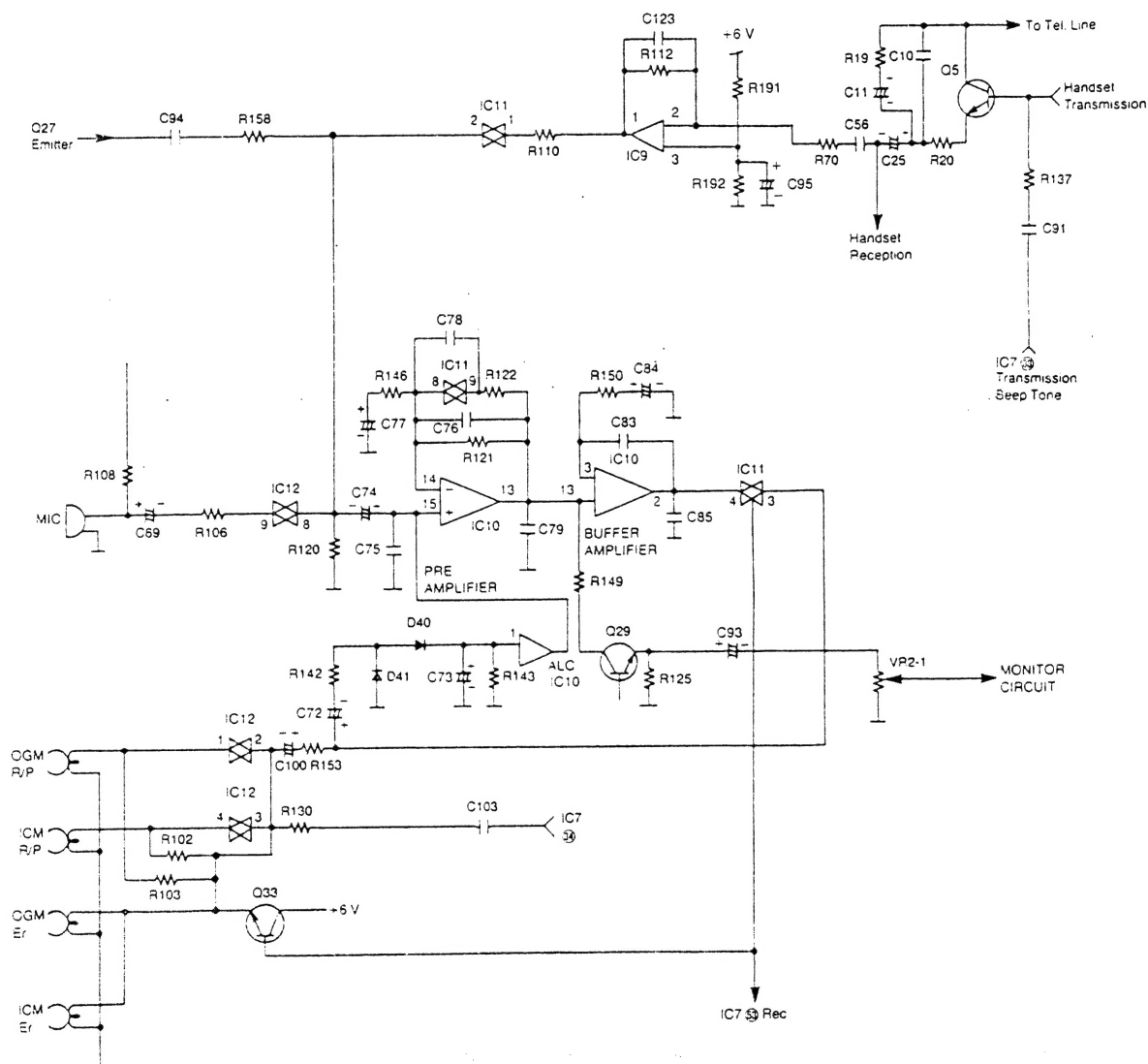


(ALC)  
 IC10 contains ALC.  
 When the Detector Circuit which consists of C72, R142, D40, D41, R143, and C73 detects the output of IC10 pin ② (Buffer Amplifier) an input is developed to IC10 pin ①, and the ALC activates.

(Signal)  
 The beep tone is generated by IC7.  
 The beep tone of the ICM recording (from pin ③④ of IC7) is processed to the ICM recording head via C103, R130 and IC12. The alarm beep which is emitted during 2-way recording flows from IC7 pin ③③ through C91 and R137, then from Q5 to the line. The resulting signal is recorded from the line.

(Erase)  
 When in the Rec mode, pin ⑤③ of IC7 is High.  
 The voltage is applied to the Erase Head, thus the Erase Head is activated.  
 The bias current is applied the R/P Head via R103 and R102.

### Circuit Diagram



## ■ MONITOR CIRCUIT AND SPEAKER MUTE CIRCUIT (Page 22)

### Circuit Operation:

The monitor signal flows as follows:

IC10 pin ⑬→R149→Q29→C93→VR2-1→C92→R129→IC10 (5-8)→C90→Speaker

A mute circuit is also provided to eliminate speaker noise, hum etc. Muting is accomplished by switching off the power to the AF amplifier. The output of IC7 pin ⑩ goes to high and Q30 turns on, and output IC10 pin ⑧ falls to ground thus muting operation is accomplished.

The beep tone signal is heard through the speaker at all times except when the recorded tape is being played back. An open state is produced at this time across the emitter and collector of Q29.

The beep tone path: IC7 ⑭→C103→R194→IC10 (5-8)→C90→Speaker

Speakerphone Reception Signal path: IC4 ⑮→C55→R93→C58→R94→IC10 (5-8)→C90→Speaker

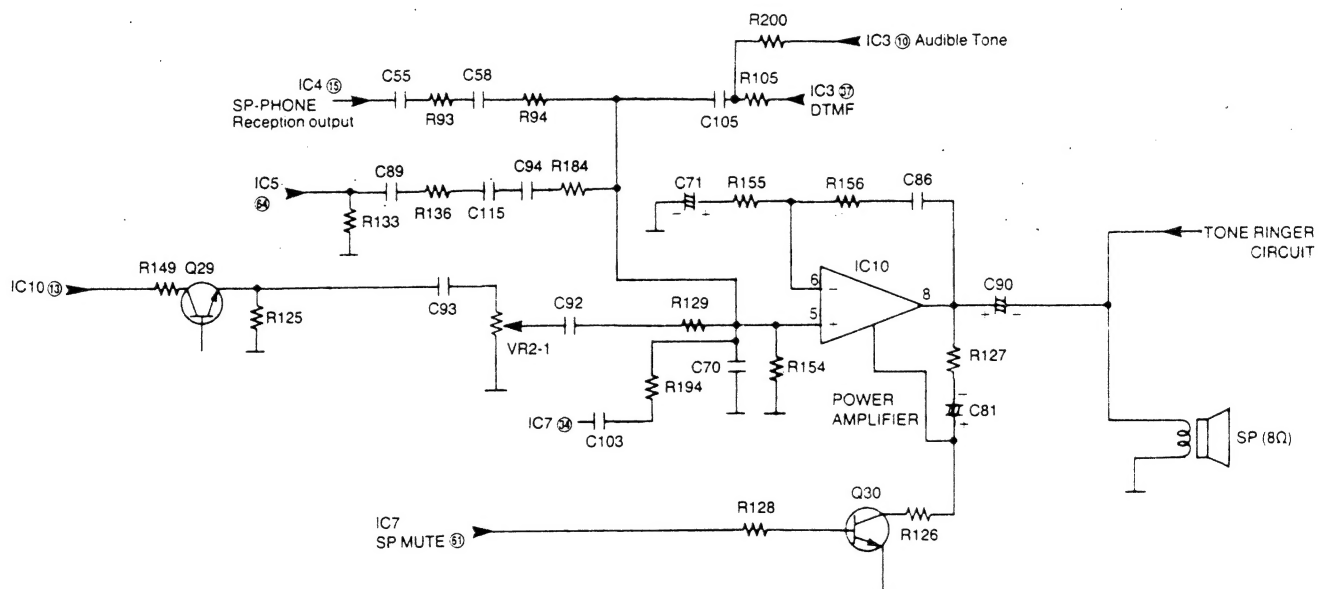
At this time, the MUTE is cleared, and sound is heard from the speaker.

DTMF Audible tone path: IC3 ⑰→R105→C105→IC10 (5-8)→C90→Speaker

The DTMF monitor tone is outputted in the speakerphone mode, hence, as described above, the MUTE is cleared, enabling the tone to be monitored from the speaker. When an audible tone (ITS key verification tone) is outputted, IC7 pin ⑩ detects that IC3 ⑨ goes "LOW", and the Mute is cleared.

VOICE Synthesized signal path: IC5 ⑭→C89→R136→C115→C94→R184→IC10 (⑤ - ⑧)→C90→Speaker

### Circuit Diagram



## ■ OGM END DETECTOR CIRCUIT (Page 23)

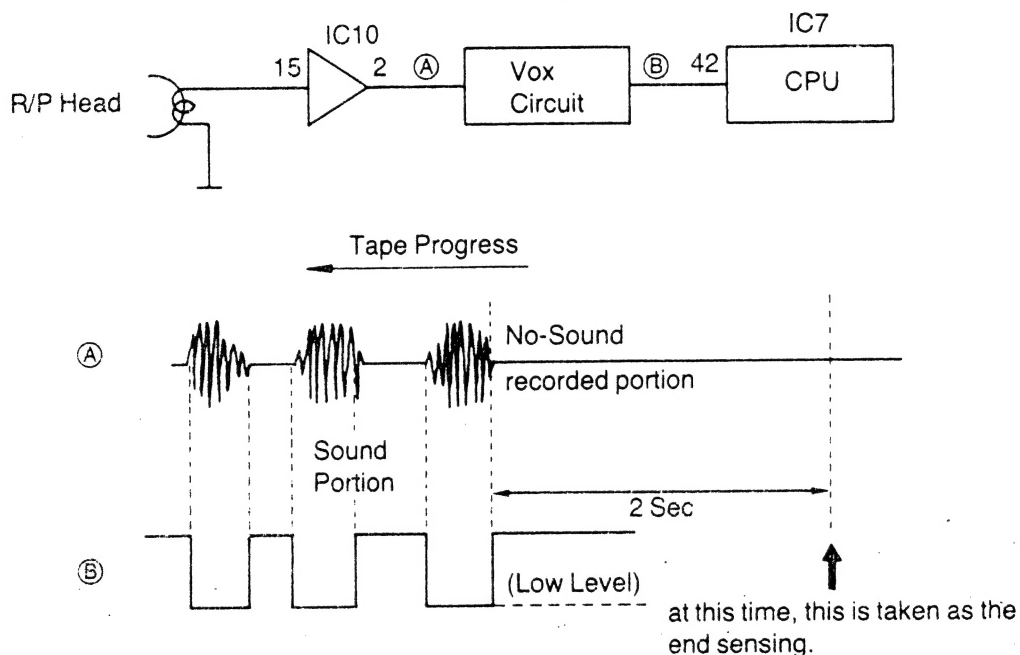
### Circuit Operation:

When the OGM Button is pressed upon completion of the OGM recording, no sound signals are recorded on the tape, the tape sound track continues to the end and is stopped by the sensing tape.

A no-sound detection system is used during playback. If a no-sound condition exists for 2 seconds, the unit will sense it as the end of the OGM tape. The no-sound detection is detected at the vox circuit. (IC7 ④②; sound output...a low level, no-sound...a high level)

The sensing tape detection system is judged by pin ④⑤ of IC7.

### Circuit Diagram



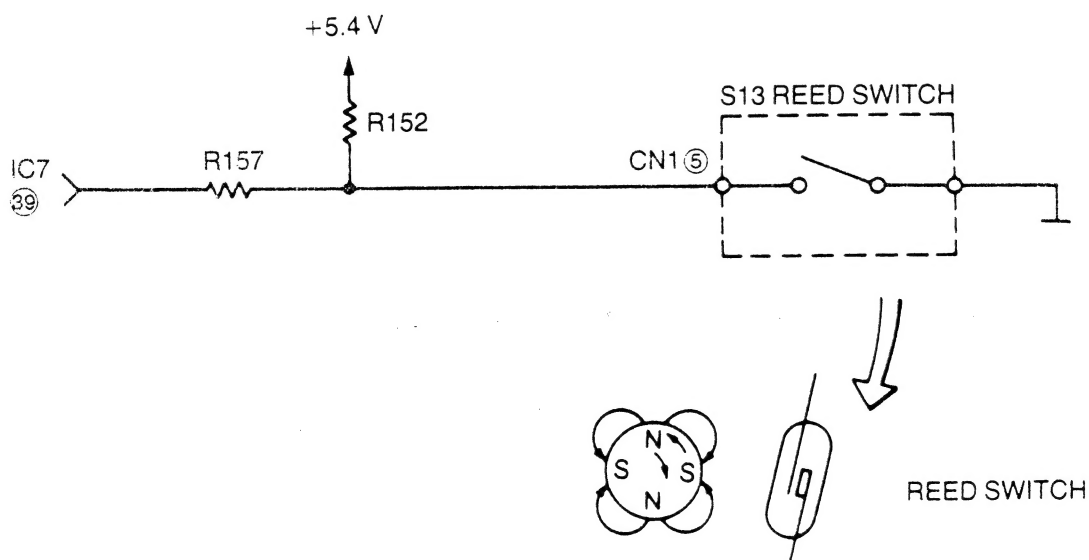
## ■ ICM TAPE ROTATION DETECTOR CIRCUIT (Page 23)

### Circuit Operation:

The changes in the direction of the magnetic field caused by the rotation of the four-pole ferrite magnet are detected by the Reed Switch; this output is added to the microcomputer input.

Reed Switch → R157 → IC7 ③⑨

### Circuit Diagram



## ■ INITIALIZE CIRCUIT (Page 25)

### Function:

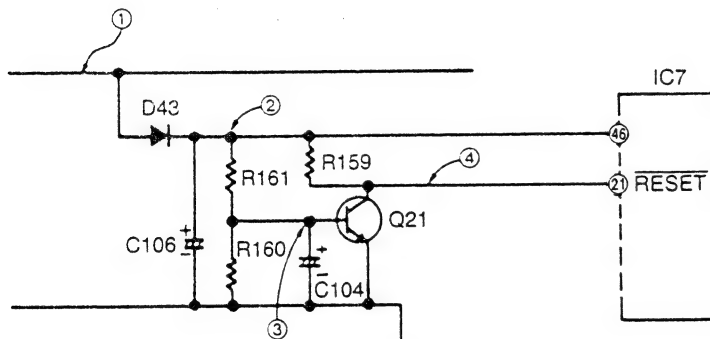
This circuit is used for initializing the microcomputer when the AC adaptor is applied an AC adaptor.

### Circuit Operation:

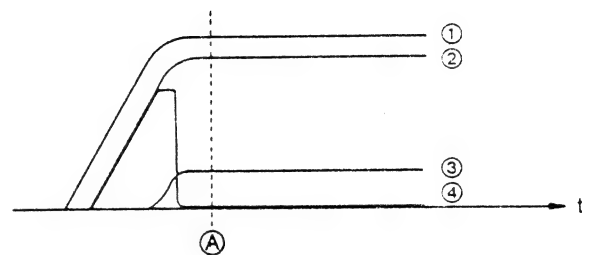
When the unit is switched ON. Then the voltage is shifted by D43 and power is supplied to the CPU. The voltage needed to reset the CPU is supplied from the collector of Q21.

When Q21 becomes ON and the reset terminal voltage drops the CPU has been reset, and the set can operate beyond poin (A) in the circuit voltage diagram.

**Circuit Diagram**



**Circuit Voltage**



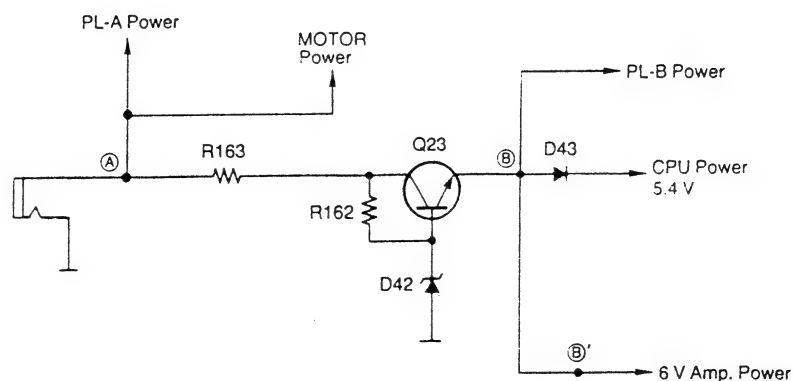
## ■ POWER SUPPLY CIRCUIT (Page 27)

### Function:

Power from the AC adaptor passes through the stage regulating block consisting of Q23 and provides system voltages of 6 V and 5 V.

### Circuit Operation:

Power from the AC adaptor is supplied directly to the plunger and the motor ((A)). Q23 is the stage of the regulated power supply. The voltage at point (B) and (B') is regulated to 6 V by the 6.8 V zener voltage of D42. The 6 V voltage is shifted by D43 to 5.4 V which is used to power the CPU, etc.



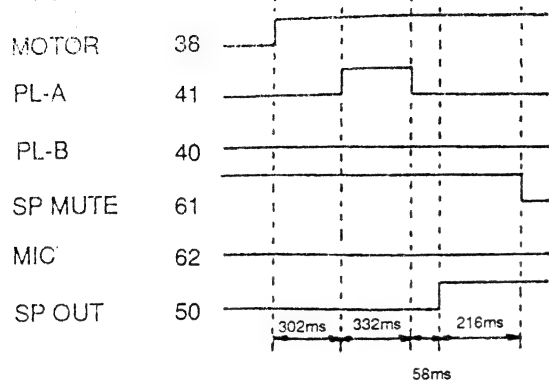
## TAPE TRANSPORT CONTROL (Page 25)

### Circuit Operation:

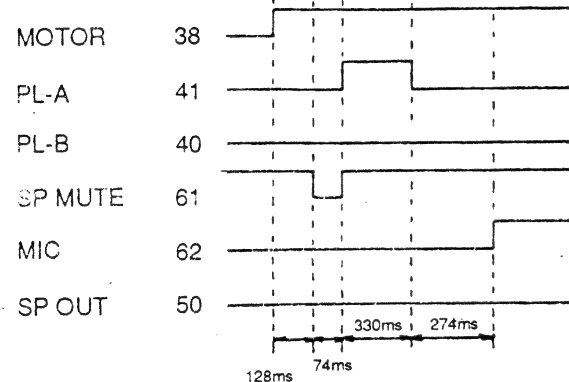
The timing for the plunger and motor which are used to operate the deck is as shown in the timing chart.

### Circuit Diagram

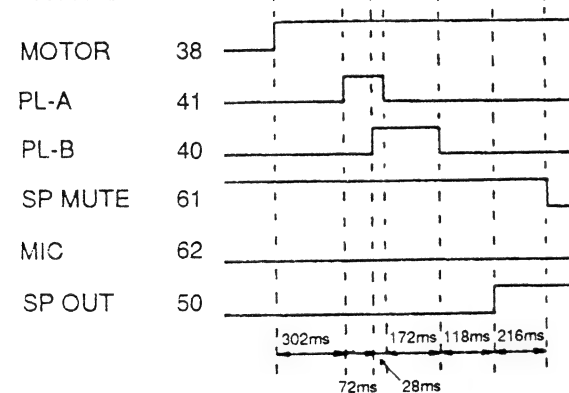
#### •OGM PLAY



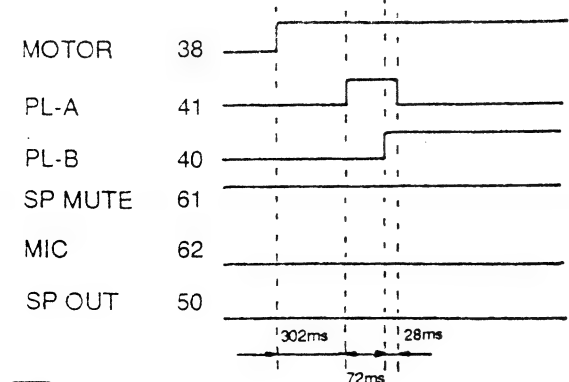
#### •OGM REC



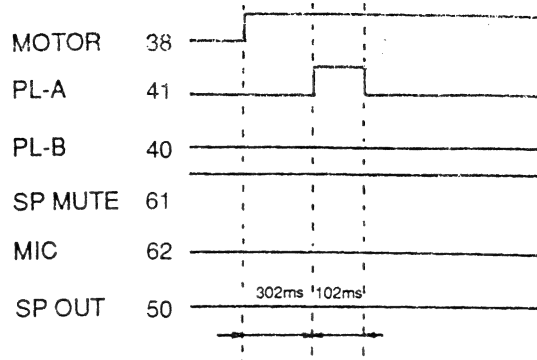
#### •ICM PLAY



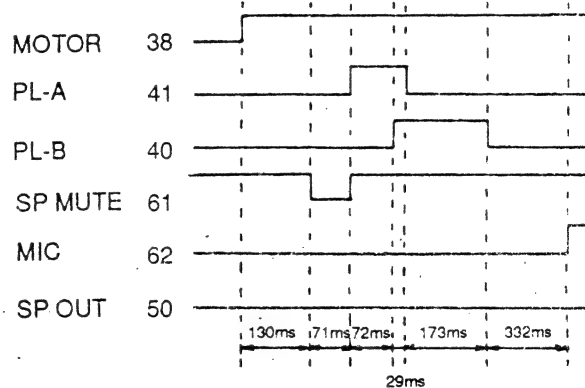
#### •ICM REW



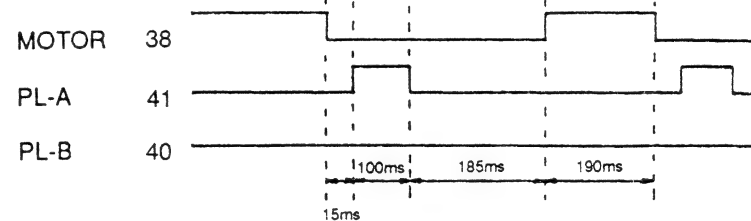
#### •ICM FF



#### •ICM REC



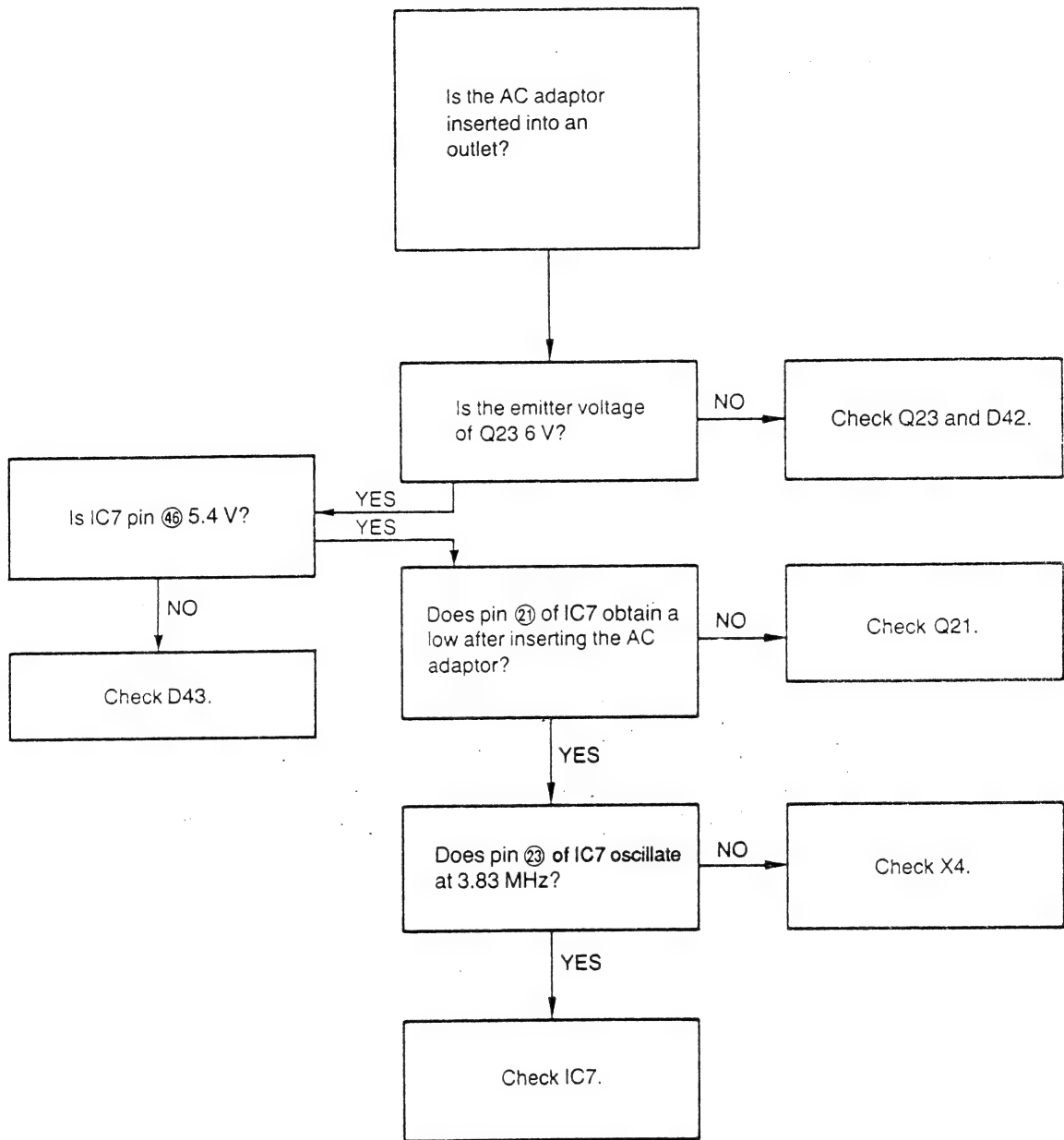
#### •STOP



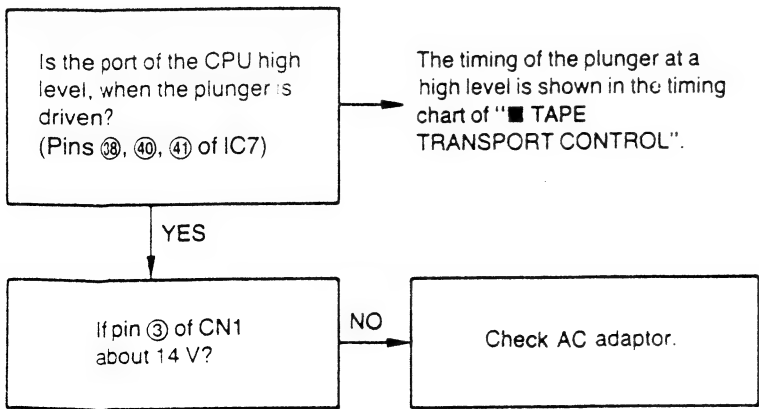


# ■ TROUBLE SHOOTING GUIDE (TAM) (Page 28)

## 1) NO FUNCTIONS OPERATE



## 2) THE PULL OF PLUNGER IS POOR OR NOT AT ALL.

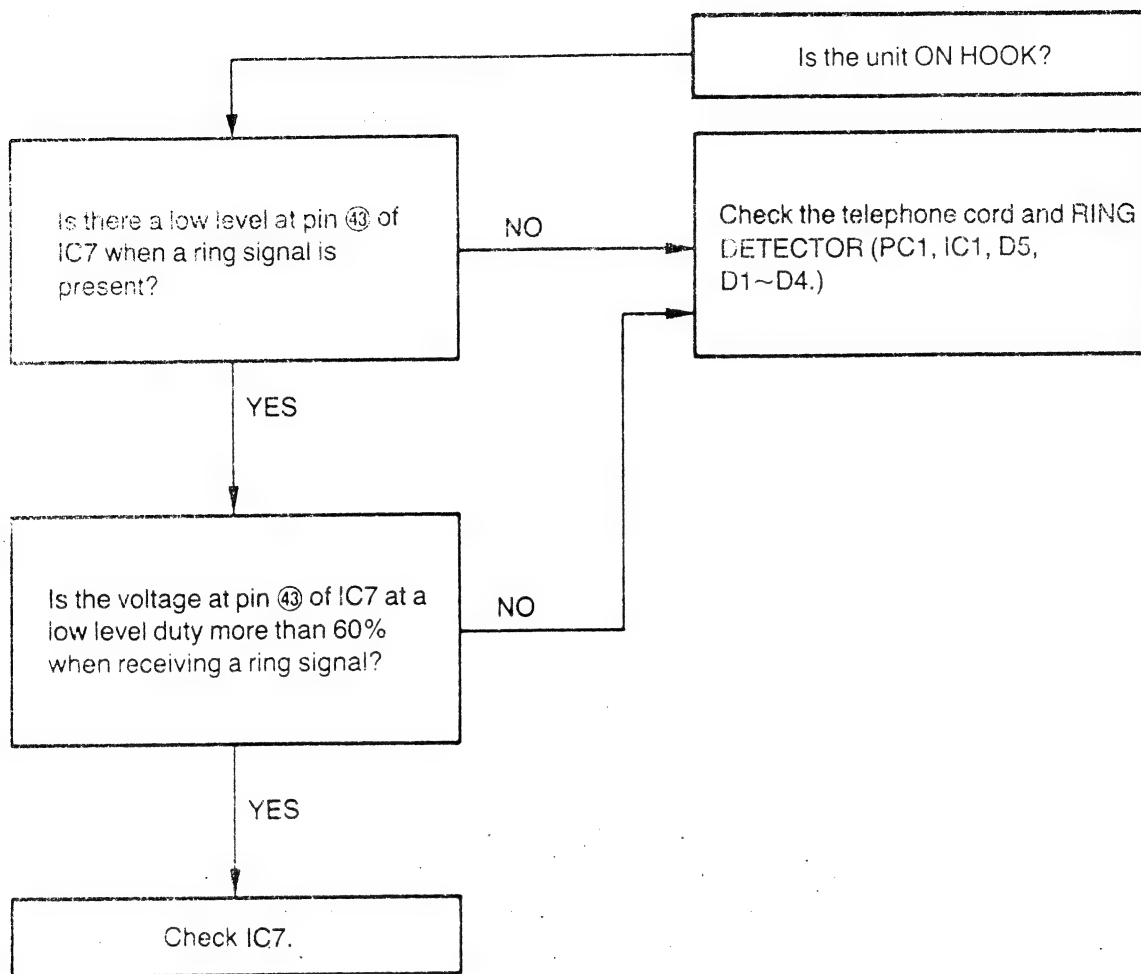


### Notes:

- 3) OGM TAPE DOES NOT STOP
- 4) OGM END MARK DETECT
- 5) FAST ERASE DOES NOT WORK
- 9) NO OR LOW OGM PLAYBACK

These contents are common use with the Technical Guide of model KX-T2430/2432 (order No. KM48801281G1).

6) DOES NOT ANSWER TELEPHONE CALL



7) • ICM CONTINUES TO RECORD AFTER THE CALLER HANGS UP.

• END OF MESSAGE CLIPPED WHEN CALLER HANGS UP.

When the caller hangs up, the KX-T2432-1 or KX-T2429-1 can detect the following 4 signal types.

- A. CPC pulse.
- B. Dial tone or other continuous tones.
- C. Silence.
- D. Cyclic signals.

A. Check CPC DETECTOR CIRCUIT (Q3, R12, R13, R14, R15, R151, D44, IC7, pin ③②.)

B., C., D.

Check VOX DETECTOR CIRCUIT (IC9, C66, D35, D36, C65, R116, R117, R118, C67, R115, R114, R113, R250, D39, R119, IC7 pin ④②.)

8) REMOTE CONTROLLER DOES NOT WORK/RESPONSE IS POOR.

The following are considered for the causes of no remote reception:

- A. Is the security code the same as set on the unit.
- B. High distortion in LINE OUTPUT CIRCUIT causing interference between transmitting signal and remote signal.
- C. Excessive loss in telephone line.

A. Check the security code of the unit.

B. Check LINE OUTPUT CIRCUIT (Q5).

C. Test on telephone line known to be working properly.

• If all of the above check N.G., check the remote controller detect circuit (IC9, IC7).

■ TROUBLE SHOOTING GUIDE (ITS) (Page 32)

1. UNIT DOES NOT TURN ON

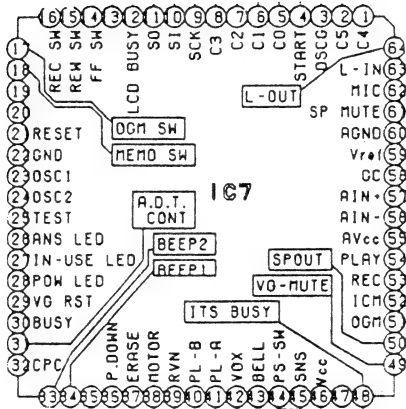
Wards of "KX-T2432 only"  
Wards of "KX-T2430 only"  
(Model KX-T2432/2429)



Detetion  
(Model KX-T2432-1/2429-1)

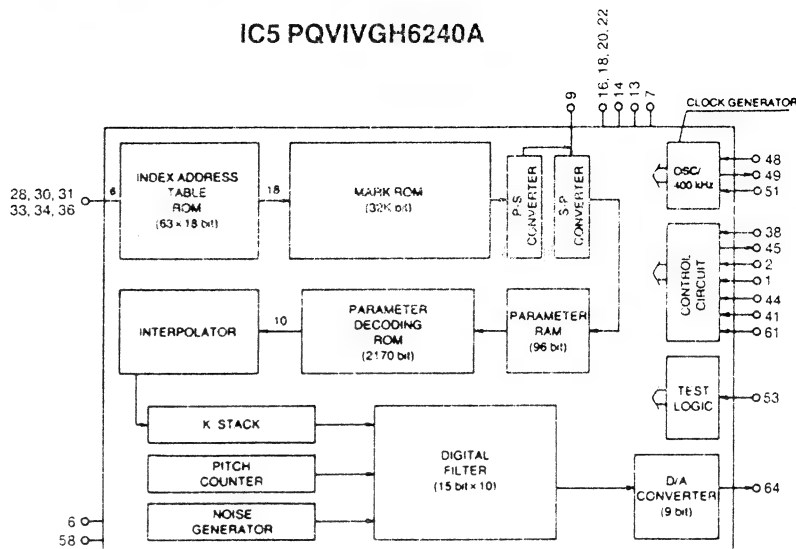
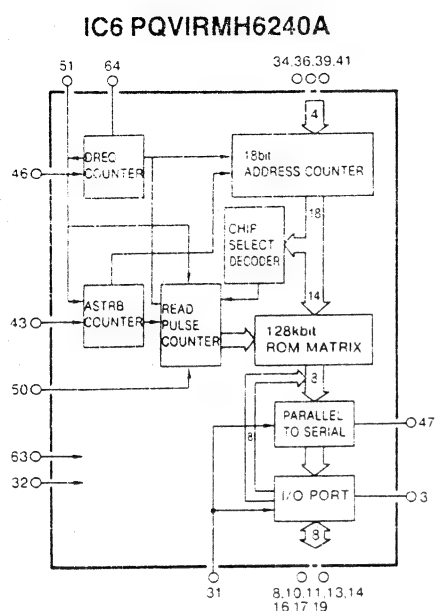
CPU DATA

IC7 PQVI4678A01H



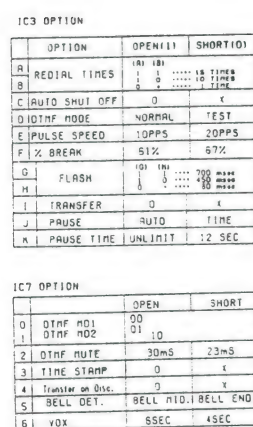
Pin No.	Function	High	Low	Pin No.	Function	High	Low
1	C4			33	BEEP1		
2	C5			34	BEEP2		
3	OSCG		ON	35	Power-Down	Enable to Power	Disable to Power
4	START	ON		36	ERASE	ON	OFF
5	C0			37	MOTOR	ON	OFF
6	C1			38	CPC		Enable to CPC
7	C2			39	VOX	Disable to Sound	Enable to Sound
8	C3			40	PL-B	ON	OFF
9	SCK			41	PL-A	ON	OFF
10	SI			42	Reed SW		
11	SO			43	BELL	Disable to Bell	Enable to Bell
12	LCD Busy		Busy	44	Position SW	OFF	ON
13	PB/PAUSE	ON	OFF	45	OGM Sensing	OFF	ON
14	FF	ON	OFF	46			
15	REW	ON	OFF	47			
16	REC	ON	OFF	48	ITS Busy	Busy	
17	OGM	ON	OFF	49	VG Mute	ON	OFF
18	MEMO	ON	OFF	50	SP Out	ON	OFF
19	ON/OFF	ON	OFF	51	OGM	ON	OFF
20	Slob	ON	OFF	52	ICM	ON	OFF
21	Reset			53	REC	ON	OFF
22	GND			54	PLAY	ON	OFF
23	OSC1			55			
24	OSC2			56			
25	TEST			57			
26	ANSWER LED	OFF	ON	58			
27	IN USE LED	OFF	ON	59			
28	POWER LED	OFF	ON	60			
29				61	SP MUTE	ON	OFF
30	VG RST		ON	62	MIC	ON	OFF
31	BUSY		Busy	63	LINE IN	ON	OFF
32	ADT Control		Key Tone Output	64	LINE OUT	ON	OFF

## IC BLOCK DIAGRAM



## SERVICE HINTS

SYMPTOM	CURE
DOES NOT RING	Replace IC1 and CF1.
ANSWERING MACHINE ANSWERS ITSELF	Check PC1, Q1, Q2 and R203.
OGM RECORDING DISTORTED	Check IC10, R122, IC11, R153, Q33, R102 and R103.
NO POWER/AFTER POWER FIXED NO PLUNGER A ACTIVATION	Check Q23, D42, R162 and R163.
INTERMITTENT REWIND	Check SW218.
GOES INTO HOLD AFTER TAKING ICM	Check Q14.
KEYPAD INOP	Check solder connections on CN3~5 and CN7.
NO OGM	Check IC7, IC10, IC11, IC12, Q29 and Q30.
CAN DIAL OUT BUT INCOMING CALLS GET BUSY SIGNAL	Check Q2.
HOLDS LINE CONSTANTLY	Check Q1.
SHUTS OFF AFTER OGM	Check IC9 and D39.
WOULD NOT RECORD ALL OGM	Check IC7, IC11, IC12, Q33 and R103.



- Notes:
1. S1: Hook switch in "OFF-HOOK" position.
2. S2: Ringer volume selector switch in "HIGH" position.
3. S3: Tone/Pulse select switch in "PULSE" position.
4. S4: Power on/off switch in "OFF" position.
5. S5: Playback/Pause switch.
6. S6: Speakerphone on/off switch.
7. S7: Hold switch.
8. S8: Mute switch.
9. S11: Sensing switch.
10. S12: Head Position switch.
11. S13: Reed switch.

12. S201—S204: Station switch.
13. S205: Clear switch.
14. S206: Memory switch.
15. S207: Lower switch.
16. S208: Auto switch.
17. S209: Program switch.
18. S210: Voice check switch.
19. S211: Redial switch.
20. S212: Flash switch.
21. S213: Pause switch.

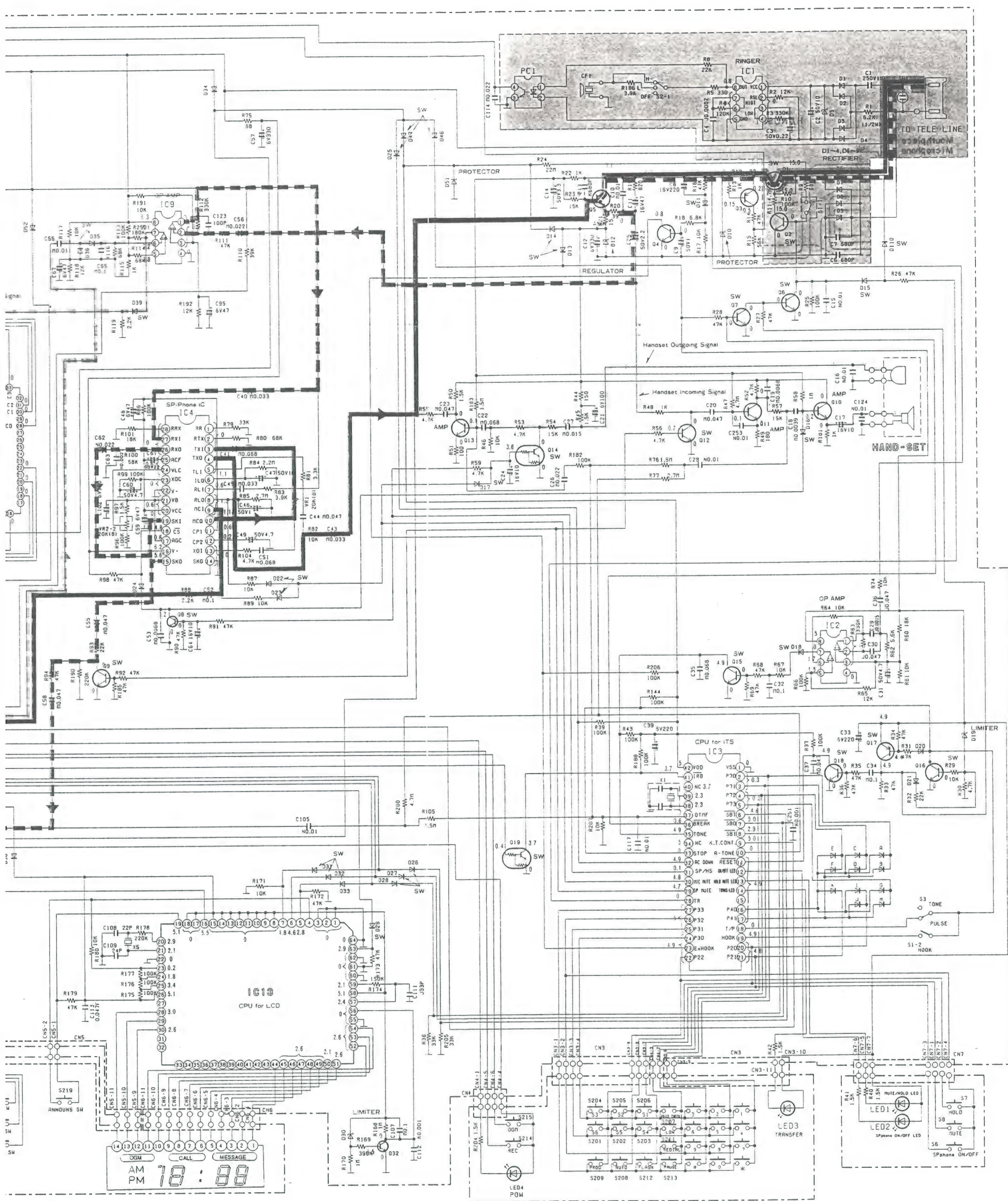
22. S214: REC switch.
23. S215: OGM switch.
24. S216: Memo switch.
25. S217: Fast forward switch.
26. S218: Rewind switch.
27. S219: Announs switch.
28. S220–231: Dialing switch.

29. DC voltage measurement are taken with electronic voltmeter from negative line.

The shaded area on this schematic shows special features important for preventing electrical shock hazards. When servicing it is essential that only the specified parts be used for the shaded areas of the schematic.



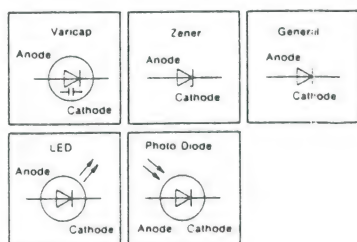
## EMATIC DIAGRAM



## Important safety notice

Area on this schematic diagram incorporates features important for protection from fire and rock hazards.

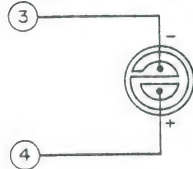
ing it is essential that only manufacturer's parts be used for the critical components in the case of the schematic.



This schematic diagram may be modified at any time with the development of new technology.

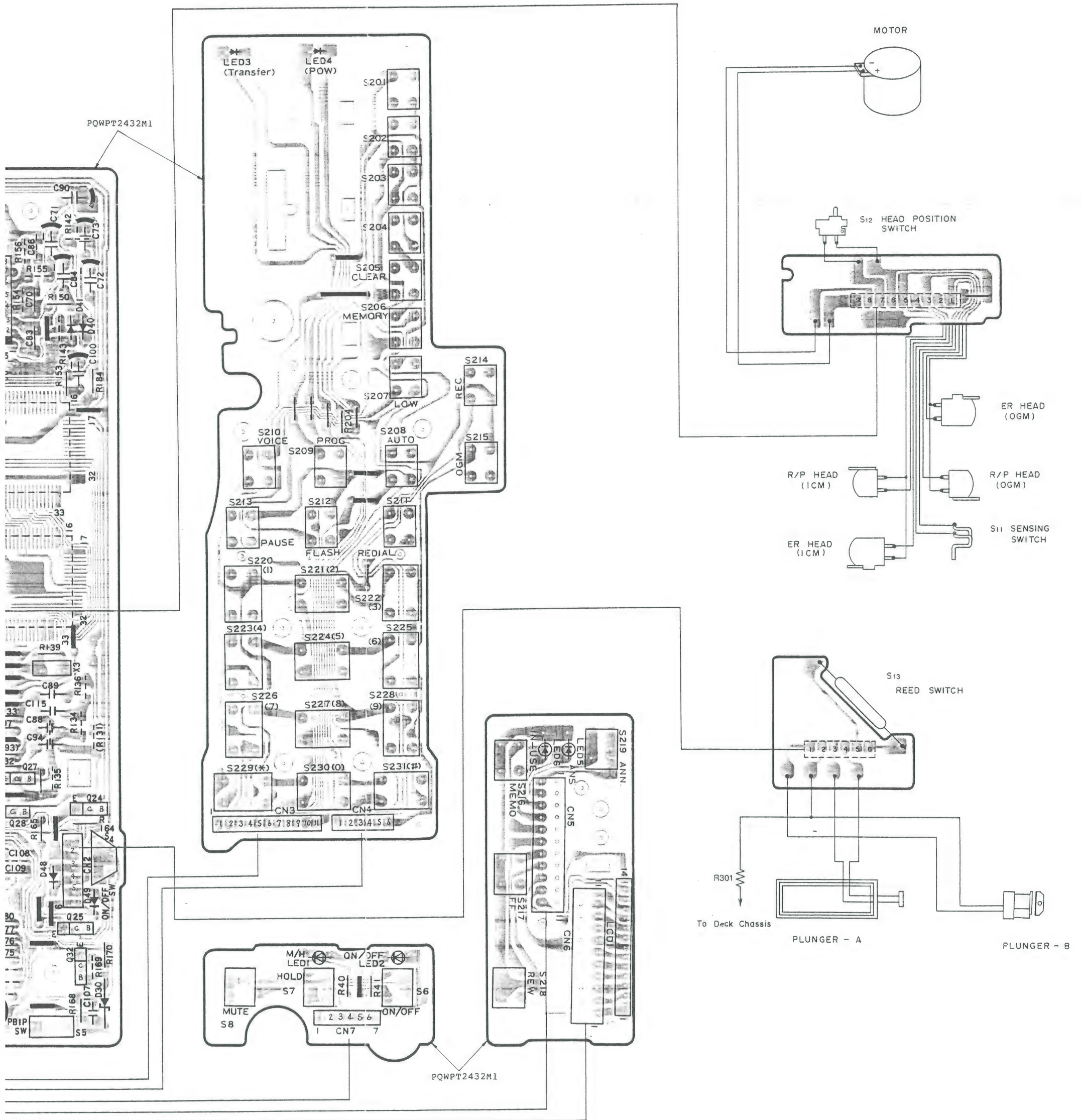


## Compo





# D AND WIRING CONNECTION DIAGRAM Component View





## REPLACEMENT PARTS LIST

Model KX-T2432-1/2429-1

## Notes:

- Printed circuit board assembly with mark (NLA) in no longer available after production discontinuation of the complete set.
- Important safety notice.  
Components identified by the  $\Delta$  mark special characteristics important for safety.  
when replacing any of these components, use only manufacturer's specified parts.
- The S mark indicates service standard parts and may differ from production parts.
- RESISTORS & CAPACITORS  
Unless otherwise specified.  
All resistors are in ohms(  $\Omega$  ) k=1000 $\Omega$ , M=1000k $\Omega$   
All capacitors are in MICRO FARADS( 0.001 $\mu$ F ) P=  $\mu$ F  
\*Type & Wattage of Resistor  
Type

ERC:Solid	ERX:Metal Film	ERDS,PQRD:Carbon
ERD:Carbon	ERG:Metal Oxide	PQRQ:Fusible Resistor
RRD:Chip	ERO:Metal Film	PQ4R:Chip

Wattage

10,16:1/8W	14,25:1/4W	12:1/2W	1:1W	2:2W	3:3W
------------	------------	---------	------	------	------

\*Type &amp; Voltage of Capacitor

Type

ECFD:Semi-Conductor	ECED,ECKD,PQCB: Ceramic
EQCS:Styrol	ECQM,ECQV,ECQE : Polyester
PQCBX,ECUV:Chip	ECEA,ECSZ : Electrolytic
ECMS:Mica	ECQP : Polypropylene

Voltage

ECQ Type	ECQV Type	ECSZ Type	Others	
1H: 50V	05: 50V	0F:3.15V	0J :6.3V	1V :35V
2A:100V	1:100V	1A:10V	1A :10V	50,1H:50V
2E:250V	2:200V	1V:35V	1C :16V	1J :63V
2H:500V		0J:6.3V	1E,25:25V	2A :100V

Ref. No.	Part No.	Part Name & Description	Pcs
MECHANICAL PARTS			
M1	PQJH6E4Z	Erase Head	2
M2	PQJH1E6Z	P/R Head	2
M3	PQFH1004Y	Pinch Roller (ICM)	1
M4	PQFH1104Z	Pinch Roller (OGM)	1
M5	PQFW37Z	Guide Rib, Position Switch	1
M6	PQFD9910Z	Head Base Assembly	1
M7	PQHD17Z	Screw	1
M8	PQFR9909Z	Reel Table (Supply) Assembly	1
M9	PQFR9910Z	Reel Table (Takeup) Assembly	1
M10	PQFM9908Z	Motor Assembly	1
M11	PQFI4Z	Rubber Spacer, Motor	2
M12	PQHD4Z	Screw, Motor Mtg	2
M13	PQFG45Z	Gear, FF	1
M14	PQFZ9903Z	Flexible P.C.Board Assembly	1
M14-1	PQJS9B30Z	Connector, 9P	1
M15	PQFD76Z	Leaf Spring	1
M16	PQFD9908Z	F/R Lever Assembly	1
M17	PQFQ9901Z	F/R Pulley Assembly	1
M18	PQFR9911Z	Play Arm Assembly	1
M19	PQUP568Z	P.C.Board	1
M20	PQJS6B30Z	Connector, 6P	1
M21	PQFP119Z	Plunger-A	1
M22	PQFP121Z	Plunger-B	1
M23	PQFD70Y	Operation Plate	1
M24	PQFF9905Z	Flywheel (ICM) Assembly	1
M25	PQFF9906Z	Flywheel (OGM) Assembly	1
M26	PQFY9905Y	Trigger Lever-B Assembly	1
M27	PQFY9904Y	Trigger Lever-A Assembly	1
M28	PQFG9903Z	Cam Gear Assembly	1
M28-1	PQFS97Z	Spring, Cam Gear	1
M29	PQFD9907Z	Assistant Plate Assembly	1
M29-1	PQFS92Z	Spring, Assistant Plate	1
M30	Not Used		
M31	PQFC9908Y	Mechanism Base Assembly	1
M32	PQFB2Y	Belt	1
M33	PQFS87Z	Spring, Trigger Lever-A	1
M34	PQFS93Z	Spring, Assistant Plate	1
M35	PQFS88Z	Spring, Play Arm	1

Ref. No.	Part No.	Part Name & Description	Pcs
M36	PQFS86Z	Spring, Plunger-A	1
M37	PQFS94Z	Spring, Head Base	1
M38	PQFS90Z	Spring, Reel Table	2
M39	PQFS98Z	Spring, Head Azimuth	2
M40	PQHD18Z	Screw	1
M41	PQFN7Z	Washer	4
M42	Not Used		
M43	PQFN50Z	Washer	2
M44	PQFN16Z	Washer	2
M45	PQFS106Z	Spring	1
M46	PQFD77Z	Spring	1

## INTEGRATED CIRCUITS, TRANSISTORS &amp; DIODES

IC1	PQVIBA6565A	IC	$\Delta$	1
IC2	AN6562	IC	S	1
IC3	MN158413KTS	IC		1
IC4	PQVISC77655S	IC		1
IC5	PQVIVGH6240A	IC		1
IC6	PQVIRMH6240A	IC		1
IC7	PQVIA678A01H	IC		1
IC9	PQVINJM4558D	IC	S	1
IC10	PQVITA7628P	IC	S	1
IC11,12	PQVITC4066BP	IC	S	2
IC13	PQVIO1G097	IC		1
Q1	2SA1625	Transistor(Si)	$\Delta$	1
Q2	2SD662B	Transistor(Si)	$\Delta$	1
Q3,17	2SA937	Transistor(Si)		2
Q4,9-13, 15,25,27	2SC2021	Transistor(Si)		9
Q5	2SC2120	Transistor(Si)	S	1
Q7,8,16	2SC3330	Transistor(Si)		10
18,21,28, 29,30,32, 33				
Q14	PQVTBB1L3N	Transistor(Si)		1
Q19	PQVTDTC114Y	Transistor(Si)		1
Q23	2SD1266	Transistor(Si)		1
Q24,26	2SD1225M	Transistor(Si)	S	2
D1-4,11, 13,15-18, 20-28, 34-36,40, 41,44, 46-49,52, 110	1SS131	Diode(Si)	$\Delta$ S	31
D5	MA4300	Diode(Si)		1
D6-9	PQVD1N4004	Diode(Si)	$\Delta$	4
D10	MA4180	Diode(Si)		1
D12	MA7051	Diode(Si)		1
D14	MA700	Diode(Si)		1
D19	PQVDHZ2CLL02	Diode(Si)		1
D29,31-33, 39,45,50	1S1588	Diode(Si)	S	7
D30	PQVDHZ2CLL01	Diode(Si)		1
D42	PQVDMTZ6R8	Diode(Si)		1
D43	1S2076	Diode(Si)		1
D51	MA4062	Diode(Si)		1
LED1,2	PQVDSLZ135B2	LED	S	2
LED3,4	PQVDPR2434D	LED		2
LED5	PQVDSLZ155B1	LED		1
LED6	PQVDSLZ255B1	LED		1

## JACKS

JJ1	PQJ2HA1Z	Jack, DC Telephone	$\Delta$	1
JJ2	PQJ1TB10Z	Jack, Handset		1

Ref. No.	Part No.	Part Name & Description	Pcs
SWITCHES			
S1	ESE14A211	Switch, Hook	1
S2	PQSS3A17Z	Switch, Ringer	1
S3	PQSS2A27Z	Switch, Tone/Pulse	1
S4	EVQ-QBH08T	Switch, Power On/Off	1
S5	PQSH1A13Z	Switch, Playback/Pause	1
S6-8, 201-219	EVQSS204B	Switch, SP-Phone On/Off, Hold, Mute, etc.	22
S11	PQFA9901Y	Switch, Sensing (for Deck)	1
S12	PQSH1A17Z	Switch, Head position (for Deck)	1
S13	PQSE17Y	Switch, Reed (for Deck)	1
S220-231	PQSH1A33Z	Switch, Dialing	12
OTHERS			
SA1	PQVDSAE310F1	Varistor (Surgeabsorber)	1
VR1	PQNB3A00B24M	Variable Resistor	1
VR2	PQVAM2A14B24A	Variable Resistor	1
X1	PQVBFC3584A1	Ceramic Filter	1
X3	PQVFC5B400P	Ceramic Filter	1
X4	PCVBT4.0G2	Ceramic Filter	1
X5	PQVCL3276N6Z	Crystal Oscillator	1
PC1	PQVIPC817K	Transducer (Photo Coupler)	1
CABINET PARTS			
K1	PQYMT2432M	Upper Cabinet Assembly (KX-T2432-1 only)	1
K1	PQYMT2429M	Upper Cabinet Assembly (KX-T2429-1 only)	1
K1-1	PQKE42Z2	Hanger (KX-T2432-1 only)	1
K1-1	PQKE42Z3	Hanger (KX-T2429-1 only)	1
K1-2	EFBS19C01	Buzzer	1
K2	PQYFT2432M1	Lower Cabinet Assembly (KX-T2432-1 only)	1
K2	PQYFT2429M1	Lower Cabinet Assembly (KX-T2429-1 only)	1
K3	PQYQT2432M1	Cassette Lid Assembly (KX-T2432-1 only)	1
K3	PQYQT2429M	Cassette Lid Assembly (KX-T2429-1 only)	1
K4	PQBCX61Z	Button, Memo, F/F, Rewind (KX-T2432-1 only)	1
K4	PQBCX61Y1	Button, Memo, F/F, Rewind (KX-T2429-1 only)	1
K5	PQBCX60Z	Button, Pause, Redial, Flash (KX-T2432-1 only)	1
K5	PQBCX60Y1	Button, Pause, Redial, Flash (KX-T2429-1 only)	1
K6	PQBCX62Z	Button, Prog, Auto, Voice Memo Check (KX-T2432-1 only)	1
K6	PQBCX62Z1	Button, Prog, Auto, Voice Memo Check (KX-T2429-1 only)	1
K7	PQBCX63Z	Button, Mute, Hold (KX-T2432-1 only)	1
K7	PQBCX63Z1	Button, Mute, Hold (KX-T2429-1 only)	1
K8	PQBC178Z	Button, Speakerphone	1
K9	PQBC179Z	Button, Playback/Pause (KX-T2432-1 only)	1
K9	PQBC179Y	Button, Playback/Pause (KX-T2429-1 only)	1
K10	PQBC180Z	Button, Announce (KX-T2432-1 only)	1
K10	PQBC180Z1	Button, Announce (KX-T2429-1 only)	1
K11	PQBD97Z	Knob, Volume (KX-T2432-1 only)	1
K11	PQBD97Z1	Knob, Volume (KX-T2429-1 only)	1
K12	PQBE21Z	Button, Hook (KX-T2432-1 only)	1
K12	PQBE21Z1	Button, Hook (KX-T2429-1 only)	1
K13	PQBCX91Z	Button, 12Key (KX-T2432-1 only)	1
K13	PQBCX91Y	Button, 12Key (KX-T2429-1 only)	1
K14	PQBCX59Z	Button, Dialer (KX-T2432-1 only)	1
K14	PQBCX59Y	Button, Dialer (KX-T2429-1 only)	1
K15	PQGP66Z	L.C.D. Panel (KX-T2432-1 only)	1
K15	PQGP66Y	L.C.D. Panel (KX-T2429-1 only)	1
K16	PQHR589Z	Memory Card (KX-T2432-1 only)	1
K16	PQHR589Y	Memory Card (KX-T2429-1 only)	1

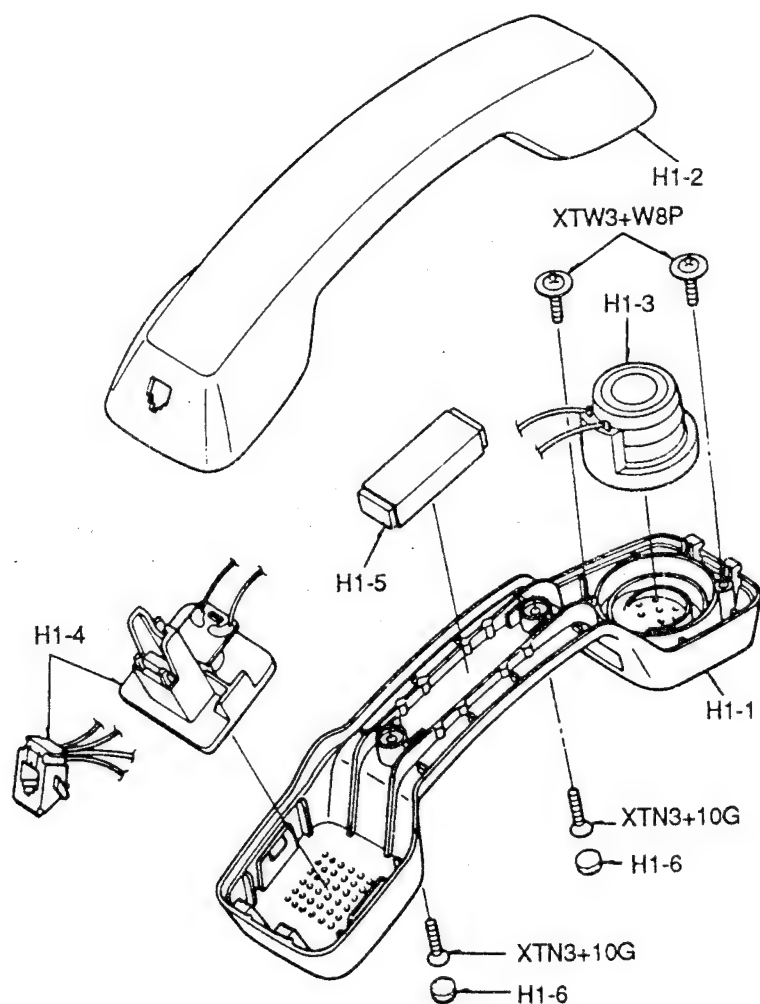
Ref. No.	Part No.	Part Name & Description	Pcs
K17	PQHP590Z	Telephone Card	1
K18	PQHR5081Z	Transparent Cover	1
K19	PQYL2432M1	Stand (KX-T2432-1 only)	1
K19	PQKL20Z7	Stand (KX-T2429-1 only)	1
HANDSET PARTS (KX-T2432-1 ONLY)			
H1	PQJX2PM403Y	Handset Assembly	1
H1-1	PQKM127W0	Lower Handset Cabinet	1
H1-2	PQKF110Z0	Upper Handset Cabinet	1
H1-3	PQAX4P03Z	Speaker	1
H1-4	PQWMJX403Y	Microphone Assembly	1
H1-5	PQHM32Y	Weight	1
H1-6	PQHG695X	Rubber Cap	2
HANDSET PARTS (KX-T2429-1 ONLY)			
H1	PQJX2PS403Y	Handset Assembly	1
H1-1	PQKM127L85	Lower Handset Cabinet	1
H1-2	PQKF110Z85	Upper Handset Cabinet	1
H1-3	PQAX4P03Z	Speaker	1
H1-4	PQWMJX403Y	Microphone Assembly	1
H1-5	PQHM32Y	Weight	1
H1-6	PQHG695W	Rubber Cap	2
ELECTRICAL PARTS			
E1	PQAS65P19Z	Speaker, 6.5cm(2.5") 32Ω	1
E2	RJM142Z	Microphone	1
E3	PQJP9D56Z	Connector, 9pin (CN1)	1
E4	PQJP6D57Z	Connector, 6pin (CN2)	1
E5	PQJP11D74Z	Connector, 11pin (CN5,6)	2
E6	PQJS11X41Z	Connector, 11pin (CN5,6)	2
E7	PQWPT2432M1	Main P.C.Board Assembly (NLA)	1
E8	PQHG503Z	Rubber Parts, Microphone Cover	1
E9	PQADLT3C202B	Liquid Crystal Display (LCD1)	1
ACCESSORIES			
A1	KX-A11	AC Adaptor	1
A2	PQJA30V	Handset Cord	1
A3	PQJA59Y	Telephone Cord	1
A4	PQJN4Z	Endless Cassette Tape (30 sec)	1
A5	PQXQ5548Y	Instruction Book (KX-T2432-1 only)	1
A5	PQXQ5612Y	Instruction Book (KX-T2429-1 only)	1
A6	PQXQ1398Z	Dial Card	1
PACKING MATERIALS			
P1	XZB34X40A01	Protection Cover (for Set)	1
P2	PQPH27Y	Protection Cover (for Handset)	1
P3	PQPN815Z	Pad	1
P4	PQPN816Y	Accessory Box	1
P6	PQPK569Y	Gift Box (KX-T2432-1 only)	1
P6	PQPK624W	Gift Box (KX-T2429-1 only)	1

Ref. No.	Part No.	Value	Ref. No.	Part No.	Value
RESISTORS					
R1	ERDS1TJ622	6.2K	R83	ERD10TLJ392	3.9K
R2	ERD16TJ123	12K	R84	ERD10TLJ225	2.2M
R3	ERD10TLJ334	330K	R85	ERD16TJ275	2.7M
R4	ERD10TLJ124	120K	R86	ERD16TJ104	100K
R5	ERD10TLJ331	330	R87	ERD10TLJ103	10K
R8	ERD16TJ223	22K	R88	ERD25TJ222	2.2K
R9	ERD10TLJ683	68K	R89	ERD10TLJ103	10K
R10	ERD16TJ104	100K	R90	ERD16TJ473	47K
R11	ERD16TJ472	4.7K	R91	ERD16TJ473	47K
R12	ERDS1TJ820	82	R92	ERD16TJ473	47K
R13	ERD16TJ102	1K	R93	ERD16TJ223	22K
R14	ERD16TJ473	47K	R94	ERD16TJ473	47K
R15	ERD10TLJ563	56K	R96	ERD16TJ104	100K
R16	ERD16TJ473	47K	R97	ERD10TLJ152	1.5K
R17	ERD16TJ103	10K	R98	ERD10TLJ473	47K
R18	ERD16TJ682	6.8K	R99	ERD16TJ104	100K
R19	ERD10TLJ821	820	R100	ERD10TLJ683	68K
R20	ERD10TLJ390	39	R101	ERD10TLJ183	18K
R21	ERD10TLJ150	15	R102	ERD16TJ273	27K
R22	ERD16TJ102	1K	R103	ERD16TJ273	27K
R23	ERD16TJ153	15K	R104	ERD16TJ472	4.7K
R24	ERC14GM226	22M	R105	ERD25TJ155	1.5M
R25	ERD10TLJ104	100K	R106	ERD16TJ682	6.8K
R26	ERD10TLJ473	47K	R107	ERD25TJ272	2.7K
R27	ERD16TJ473	47K	R108	ERD16TJ222	2.2K
R28	ERD16TJ473	47K	R110	ERD10TLJ393	39K
R29	ERD16TJ103	10K	R111	ERD10TLJ473	47K
R30	ERD16TJ472	4.7K	R112	ERD10TLJ394	390K
R31	ERD16TJ473	47K	R113	ERD10TLJ104	100K
R32	ERD16TJ223	22K	R114	ERD10TLJ683	68K
R33	ERD16TJ473	47K	R115	ERD16TJ102	1K
R34	ERD16TJ473	47K	R116	ERD10TLJ683	68K
R35	ERD16TJ473	47K	R117	ERD10TLJ103	10K
R36	ERD16TJ473	47K	R118	ERD10TLJ123	12K
R37	ERD10TLJ104	100K	R119	ERD10TLJ222	2.2K
R38	ERD10TLJ333	33K	R120	ERD10TLJ103	10K
R39	ERD10TLJ104	100K	R121	ERD10TLJ334	330K
R40	ERD16TJ152	1.5K	R122	ERD16TJ183	18K
R41	ERD16TJ152	1.5K	R123	ERDS2TJ100	10
R42	ERD25TJ152	1.5K	R124	ERD10TLJ224	220K
R43	ERD10TLJ104	100K	R125	ERD16TJ104	100K
R44	ERD10TLJ151	150	R126	ERD16TJ470	47
R45	ERD16TJ152	1.5K	R127	ERD10TLJ680	68
R46	ERD16TJ103	10K	R128	ERD16TJ103	10K
R47	ERD16TJ475	4.7M	R129	ERD16TJ681	680
R48	ERD16TJ102	1K	R130	ERD16TJ224	220K
R49	ERD10TLJ181	180	R132	ERD16TJ222	2.2K
R50	ERD16TJ152	1.5K	R133	ERD10TLJ560	56
R51	ERD10TLJ101	100	R134	ERD10TLJ822	8.2K
R52	ERD10TLJ472	4.7K	R135	ERD10TLJ684	680K
R53	ERD16TJ472	4.7K	R136	ERD10TLJ822	8.2K
R54	ERD16TJ153	15K	R137	ERD25TJ334	330K
R55	ERD16TJ472	4.7K	R139	ERD16TJ105	1M
R56	ERD16TJ472	4.7K	R140	ERD16TJ472	4.7K
R57	ERD16TJ153	15K	R141	ERD10TLJ683	68K
R58	ERD10TLJ105	1M	R142	ERD10TLJ102	1K
R59	ERD16TJ472	4.7K	R143	ERD10TLJ184	180K
R60	ERD16TJ183	18K	R144	ERD10TLJ104	100K
R61	ERD16TJ103	10K	R145	ERD10TLJ473	47K
R62	ERD10TLJ562	56K	R146	ERD10TLJ271	270
R63	ERD10TLJ334	330K	R147	ERD10TLJ473	47K
R64	ERD10TLJ103	10K	R148	ERD10TLJ105	1M
R65	ERD16TJ123	12K	R149	ERD16TJ473	47K
R66	ERD16TJ104	100K	R150	ERD16TJ681	680
R67	ERD10TLJ103	10K	R151	ERD10TLJ684	680K
R68	ERD10TLJ473	47K	R152	ERD10TLJ683	68K
R69	ERD10TLJ473	47K	R153	ERD16TJ153	15K
R74	ERD10TLJ103	10K	R154	ERD10TLJ473	47K
R75	ERD10TLJ680	68	R155	ERD10TLJ331	330
R76	ERD10TLJ155	1.5M	R156	ERD10TLJ103	10K
R77	ERD16TJ275	2.7M	R157	ERD10TLJ223	22K
R79	ERD10TLJ333	33K	R158	ERD25TJ154	150K
R80	ERD10TLJ683	68K	R159	ERD16TJ473	47K
R81	ERD10TLJ332	33K	R160	ERD16TJ183	18K
R82	ERD16TJ103	10K	R161	ERD16TJ104	100K

Ref. No.	Part No.	Value	Ref. No.	Part No.	Value
R162	ERDS1TJ391	390	R188	ERD16TJ104	100K
R163	PQRQM2VJ180	18	R190	ERD16TJ224	220K
R164	ERD16TJ102	1K	R191	ERD10TLJ103	10K
R165	ERD16TJ472	4.7K	R192	ERD16TJ123	12K
R166	ERD10TLJ471	470	R194	ERD16TJ335	3.3M
R168	ERD16TJ105	1M	R195	ERD16TJ103	10K
R169	ERD10TLJ394	390K	R196	ERD10TLJ473	47K
R170	ERD16TJ105	1M	R197	ERD16TJ103	10K
R171	ERD16TJ103	10K	R198	ERD16TJ473	47K
R172	ERD16TJ473	47K	R199	ERD16TJ472	4.7K
R173	ERD16TJ473	47K	R200	ERD10TLJ475	4.7M
R174	ERD10TLJ154	150K	R201	ERD10TLJ151	150
R175	ERD16TJ104	100K	R202	ERD10TLJ102	1K
R176	ERD16TJ104	100K	R203	ERD25TJ224	220K
R177	ERD16TJ104	100K	R204	ERD10TLJ152	1.5K
R178	ERD16TJ224	220K	R205	ERD10TLJ333	33K
R179	ERD10TLJ473	47K	R206	ERD16TJ104	100K
R180	ERD16TJ103	10K	R207	ERD10TLJ103	10K
R181	ERD16TJ102	1K	R208	ERD16TJ102	1K
R182	ERD16TJ104	100K	R209	ERD10TLJ223	22K
R183	ERD10TLJ155	1.5M	R210	ERD10TLJ223	22K
R184	ERD16TJ223	22K	R211	ERD16TJ103	10K
R185	ERD16TJ473	47K	R212	ERD10TLJ220	22
R186	ERD10TLJ392	3.9K	R250	ERD10TLJ184	180K
R187	ERD16TJ473	47K			
CAPACITORS					
C1	ECQE2105KF	1	C49	ECEA1HKS4R7	4.7
C2	ECEA1HU100	10	C51	ECFD1C683KD	0.068
C3	ECEA1HUR22	0.22	C52	ECFD1C104KD	0.1
C4	ECQM1H822JV	0.0082	C53	PQCBX1C682MX	0.0068
C6	ECKD2H681KB	680P	C55	ECFD1E473KD	0.047
C7	ECKD2H681KB	680P	C56	ECFD1E223KD	0.022
C8	ECEA1CU221	220	C57	ECEA0J331	330
C9	ECEA1HKS010	1	C58	ECFD1E473KD	0.047
C10	PQCB1C103MY	0.01	C59	ECEA1CKS470	47
C11	ECEA1EK470	47	C60	ECEA1HKS4R7	4.7
C12	ECEA0J331	330	C61	ECEA0J331	330
C13	PQCB1C1H681KB	680P	C62	PQCB1C223MY	0.022
C14	ECEA1HKS3R3	3.3	C63	PQCBX1C272MX	0.0027
C15	PQCBX1C103MY	0.01	C64	ECEA1CKS100	10
C16	PQCB1C103MY	0.01	C65	ECFD1C104KD	0.1
C17	ECEA1CKS100	10	C66	PQCB1C103MY	0.01
C18	PQCBX1C392MX	0.0039	C67	ECEA1EK470	47
C19	PQCB1C682MX	0.0068	C68	ECEA1EK470	47
C20	ECFD1E473KD	0.047	C69	ECEA1HKS4R7	0.47
C21	ECEA1CK101	100	C70	PQCB1C1H102KB	0.001
C22	ECFD1C683KD	0.068	C71	ECEA1HKS010	1
C23	ECFD1E473KD	0.047	C72	ECEA1HKS010	1
C24	ECEA1CKS100	10	C73	ECEA1AKS330	33
C25	ECEA1HKS2R2	2.2	C74	ECEA1HKS3R3	0.33
C26	ECFD1E223KD	0.022	C75	PQCBX1C103MY	0.01
C27	ECFD1E153KD	0.015	C76	ECUV1H681KB	680P
C28	PQCBX1C103MY	0.01	C77	ECEA0J331	330
C29	ECQM1H152JV	0.0015	C78	PQCB1C103MY	0.01
C30	ECQV1H473JZ	0.047	C79	PQCB1C103MY	0.01
C31	ECEA1HKS4R7	4.7	C80	ECEA1CK101	100
C32	ECFD1C104KD	0.1	C81	ECEA1EK470	47
C33	ECEA0J221	220	C82	ECEA0J221	220
C34	ECFD1C104KD	0.1	C83	PQCB1C1H681KB	680P
C35	ECFD1C683KD	0.068	C84	ECEA1CKS100	10
C36	ECQV1H473JZ	0.047	C85	PQCBX1C103MY	0.01
C37	ECFD1E473KD	0.047	C86	PQCBX1C332KX	0.0033
C39	ECEA0J221	220	C88	ECQM1H472JV	0.0047
C40	ECFD1E333KD	0.033	C89	ECFD1C104KD	0.1
C41	ECFD1C683KD	0.068	C90	ECEA0J221	220
C43	ECFD1E333KD	0.033	C91	PQCB1C103MY	0.01
C44	ECFD1E473KD	0.047	C92	ECFD1C104KD	0.1
C45	ECFD1E333KD	0.033	C93	ECFD1C104KD	0.1
C46	ECEA1HKS010	1	C94	ECFD1C104KD	0.1
C47	ECEA1HKS010	1	C95	ECEA1EK470	47
C48	ECEA1CKS470	47	C96	PQCB1C1H221KB	220P

Ref. No.	Part No.	Value
C97	PQCBC1H221KB	220P
C98	ECEA1CKS470	47
C99	ECFD1E223KD	0.022
C100	ECEA1HKS010	1
C101	ECFD1C104KD	0.1
C102	ECEA1CK101	100
C103	PQCBC1C103MY	0.01
C104	ECEA1HKS3R3	3.3
C105	PQCBC1C103MY	0.01
C106	ECEA0JU332	3300
C107	ECFD1C104KD	0.1
C108	ECUV1H220JC	22P
C109	PQCBC1H240JU	24P
C111	PQCBC1H330JL	33P
C112	PQCBC1H102KB	0.001
C113	EECW0HS473Z	0.047F
C114	ECFD1E223KD	0.022
C115	ECOM1H103JV	0.01
C116	ECBC1C103MY	0.01
C117	PQCBC1C103MY	0.01
C118	ECEA1AU221	220
C120	PQCBC1C103MY	0.01
C123	ECUV1H101JC	100P
C124	PQCBX1C103MY	0.01
C251	ECUV1H102KB	0.001
C253	PQCBC1C103MY	0.01
C254	PQCBC1C103MY	0.01

## HANDSET PARTS LOCATION



(Model KX-T2432-1/2429-1)

# Service Manual

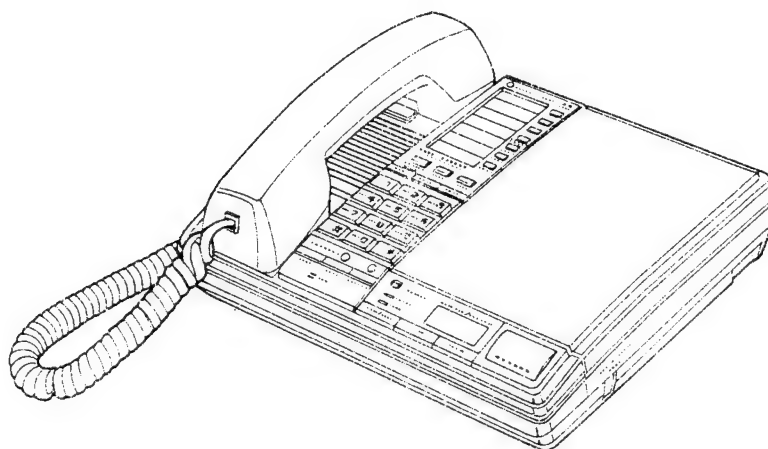
Telephone Equipment

KX-T2432

**AUTO-LOGIC™**  
**EASA-PHONE®**



Integrated  
Telephone System



## SPECIFICATIONS

### General:

Power Source: AC; AC adaptor KX-A11 (DC 12 V)  
Power Output: 350 mW (max.)  
Speaker: Unit; 6.5 cm (2½") PM dynamic  
Handset: 2.6 cm (1¾") Ceramic receiver unit, 0.1 µF.  
Microphone: Condenser microphone  
Jacks: Telephone line, DC IN  
Dimensions: 231 (W) × 213 (D) × 104 (H) mm  
(with handset)  
(9½" × 8½" × 4¾")  
Weight: 1.11 kg (2 lbs. 7 oz.) without cassette tapes

### Telephone Section:

Memory Capacity: 20 telephone numbers, up to 16 digits for each station/  
12 telephone numbers, up to 16 digits for each direct Call Button  
Dial Speed: Tone (DTMF)/Pulse (10 pps)  
Redial: Last dialed telephone number up to 15 times in  
a 10 minute period, to store the redial number  
into the automatic dialer's memory  
Pause: Two automatic dial tone detectors

### Tape Deck Section:

Outgoing Message: 30-second endless loop cassette  
(OGM) (Variable, up to 30 seconds)  
Incoming Message: C-60 regular cassette: selectable  
(ICM) recording times  
A0/1 MIN/VOX with complete voice activation  
Tape Speed: 4.8 cm/s  
Wow and Flutter: 0.55% (WRMS)  
Motor: Electrical governor motor

Design and specifications are subject to change without notice.

# Panasonic

Matsushita Services Company  
50 Meadowland Parkway,  
Secaucus, New Jersey 07094

Panasonic Hawaii Inc.  
91-238 Kauni St. Ewa Beach  
P.O. Box 774  
Honolulu, Hawaii 96808-0774

Matsushita Electric  
of Canada Limited  
5770 Ambler Drive, Mississauga,  
Ontario, L4W 2T3

Panasonic Sales Company,  
Division of Matsushita Electric  
of Puerto Rico, Inc.  
Ave. 65 De infantena, KM 9.7  
Victoria Industrial Park  
Carolina, Puerto Rico 00630

# LOCATION OF CONTROLS

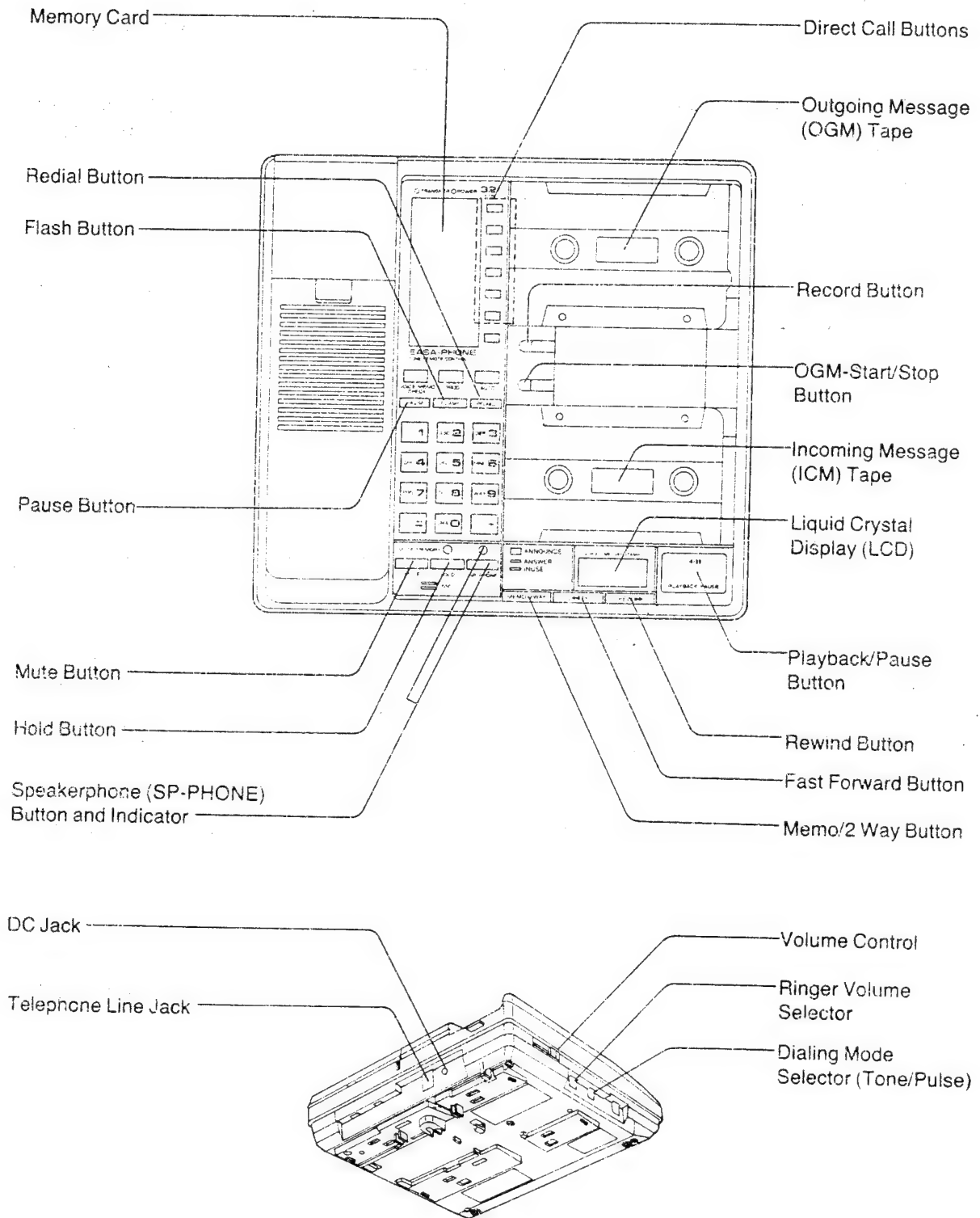


Fig. 1

# DISASSEMBLY INSTRUCTIONS

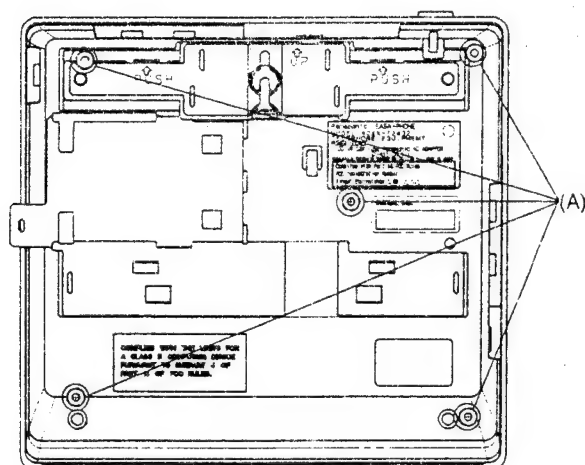


Fig. 2

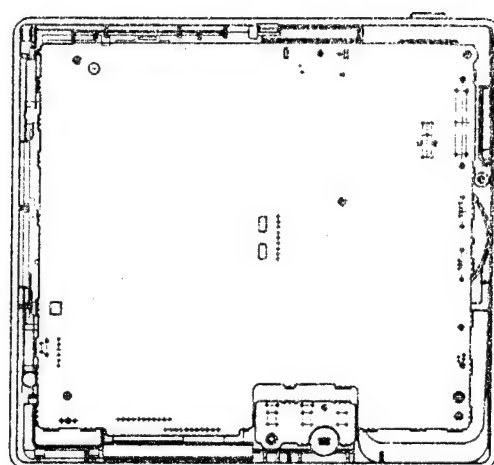


Fig. 3

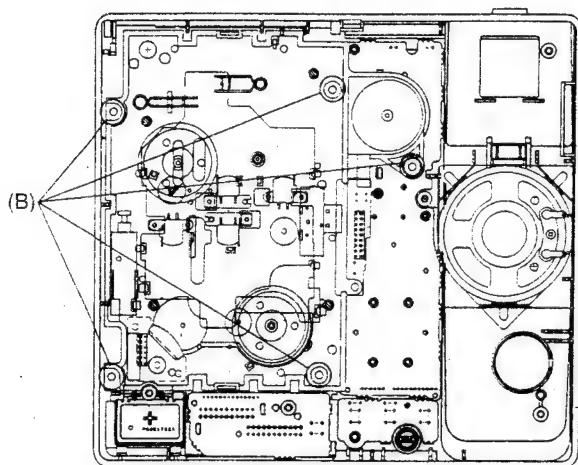


Fig. 4

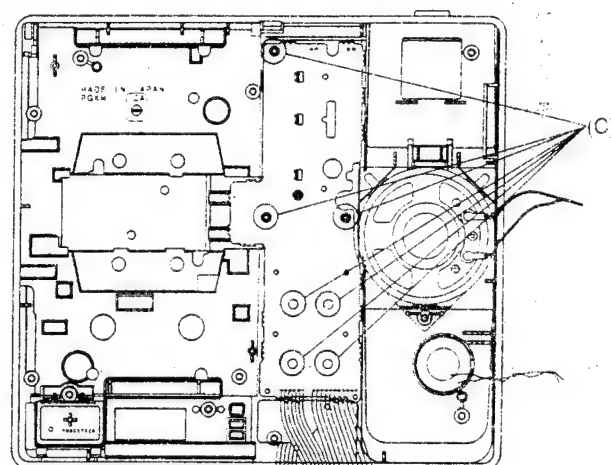


Fig. 5

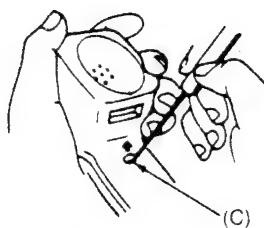


Fig. 6

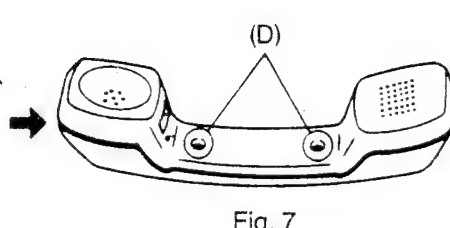


Fig. 7

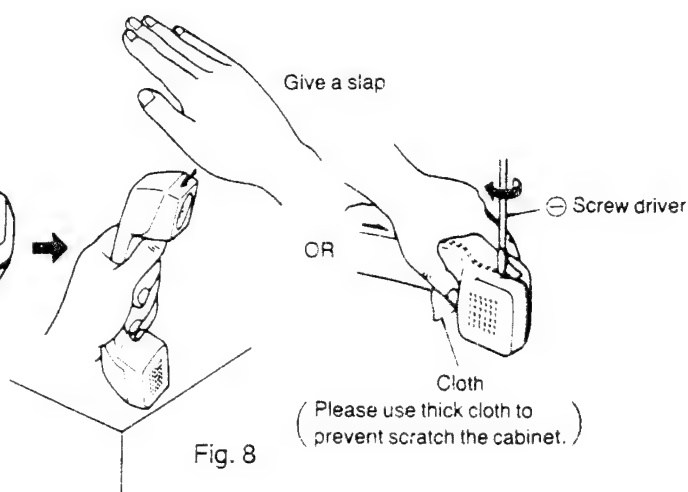


Fig. 8

Ref. No.	Procedure	Shown in Fig.—	To remove—	Remove—
1	1	2	Lower Cabinet	Screws (3×16) ..... (A)×5
2	1, 2	3	Main Printed Circuit Board	Remove the Main Printed Circuit Board
3	1~3	4	Cassette Deck	Red Screws (3×10) ..... (B)×5
4	1~4	5	Sub Printed Circuit Board	Screws (2.3×6) ..... (C)×7
5	5~7	6	Handset Cabinet	Rubbers ..... (D)×2
6		7		Screws (3×10) ..... (E)×2
7		3		Remove the cabinet



## BLOCK DIAGRAM

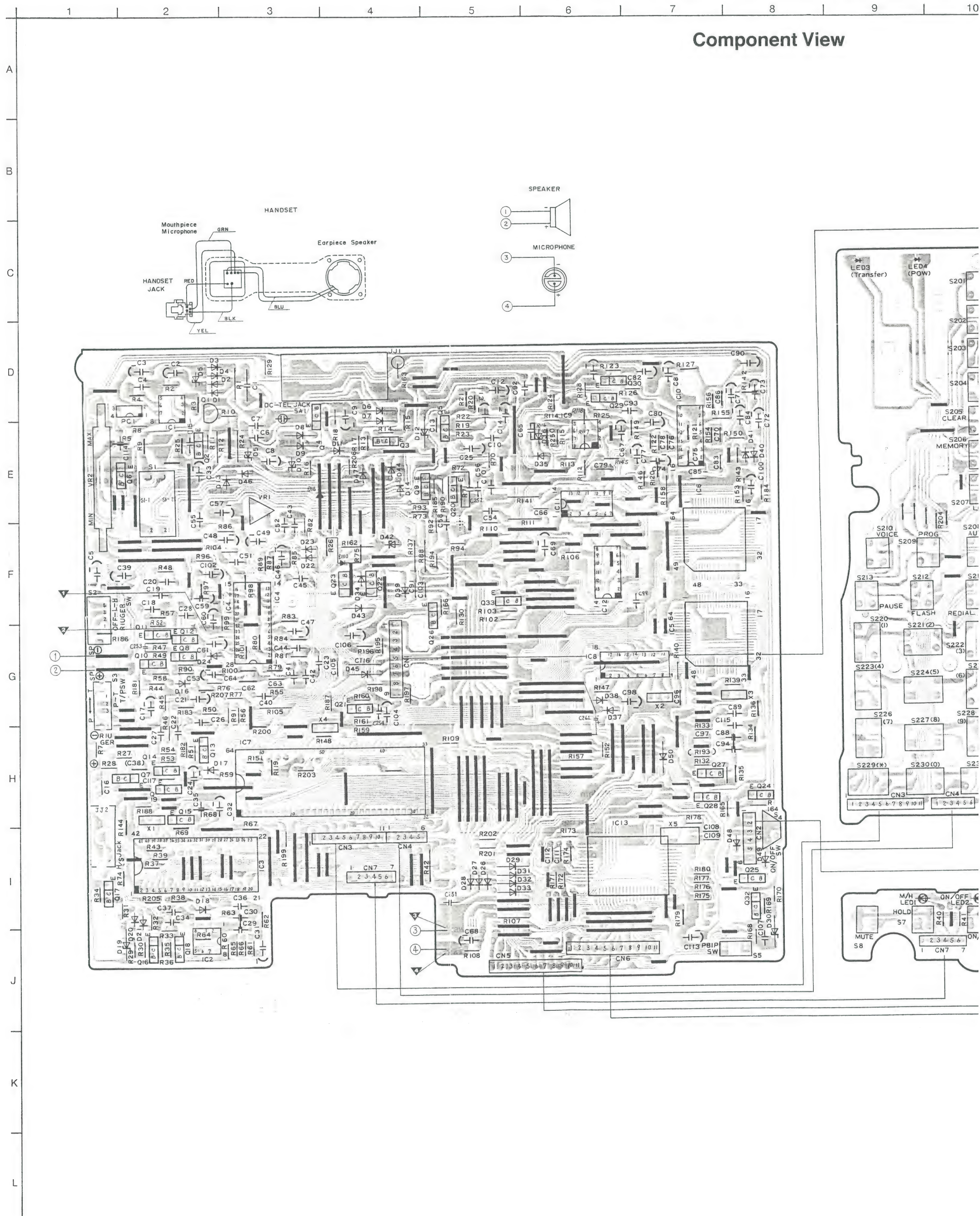


Fig. 9



## CIRCUIT BOARD AND WIRING CONNECTION I

## Component View

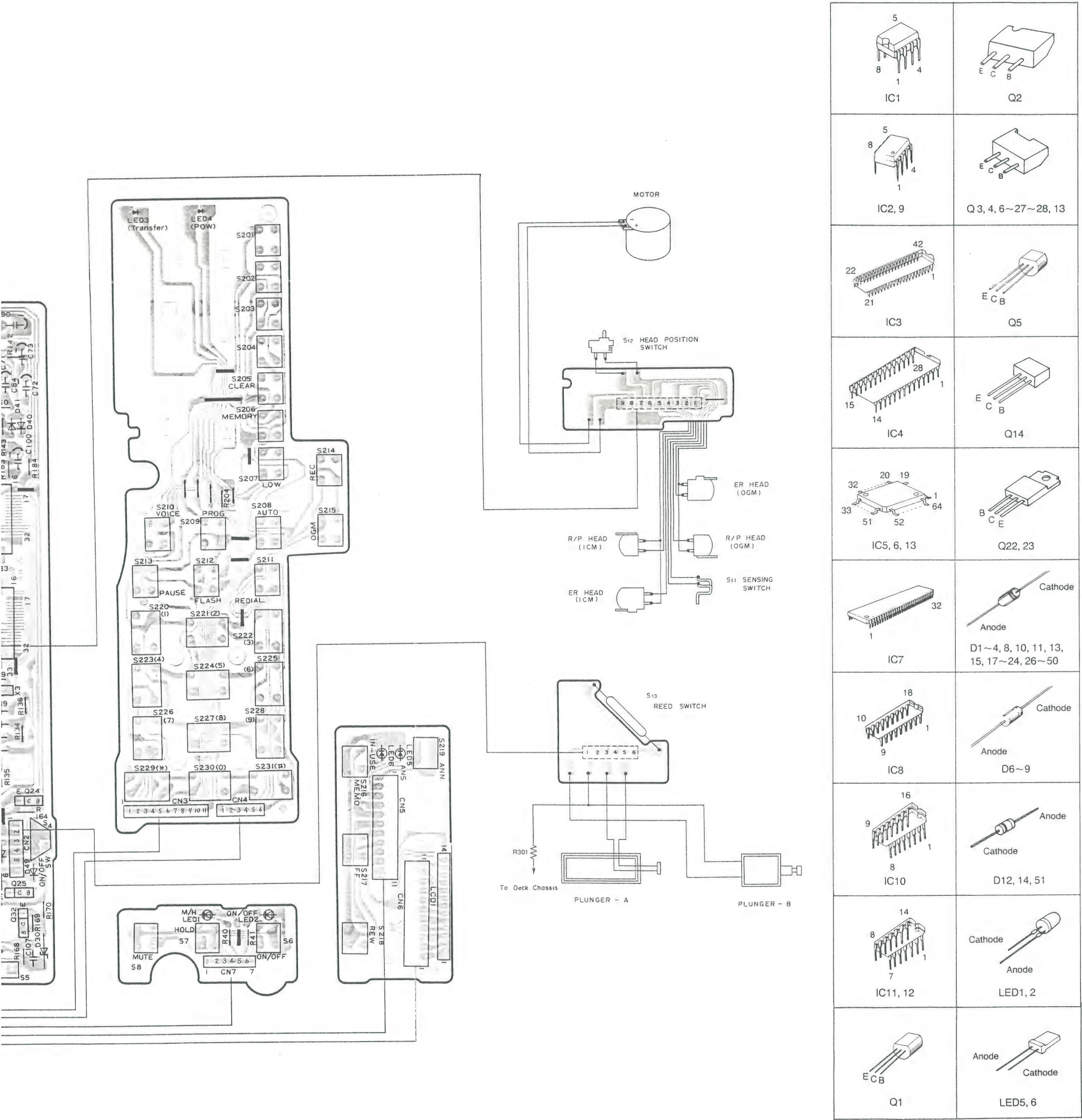




ND WIRING CONNECTION DIAGRAM

8	9	10	11	12	13	14	15	16	17
---	---	----	----	----	----	----	----	----	----

ponent View



 IC1	 Q2
 IC2, 9	 Q3, 4, 6~27~28, 13
 IC3	 Q5
 IC4	 Q14
 IC5, 6, 13	 Q22, 23
 IC7	 LED1, 2
 IC8	 LED5, 6
 IC10	 LED7
 IC11, 12	 LED8
 Q1	 LED9

This circuit board may be modified at any time with the development of new technology.

HANDSET PARTS LOCATION

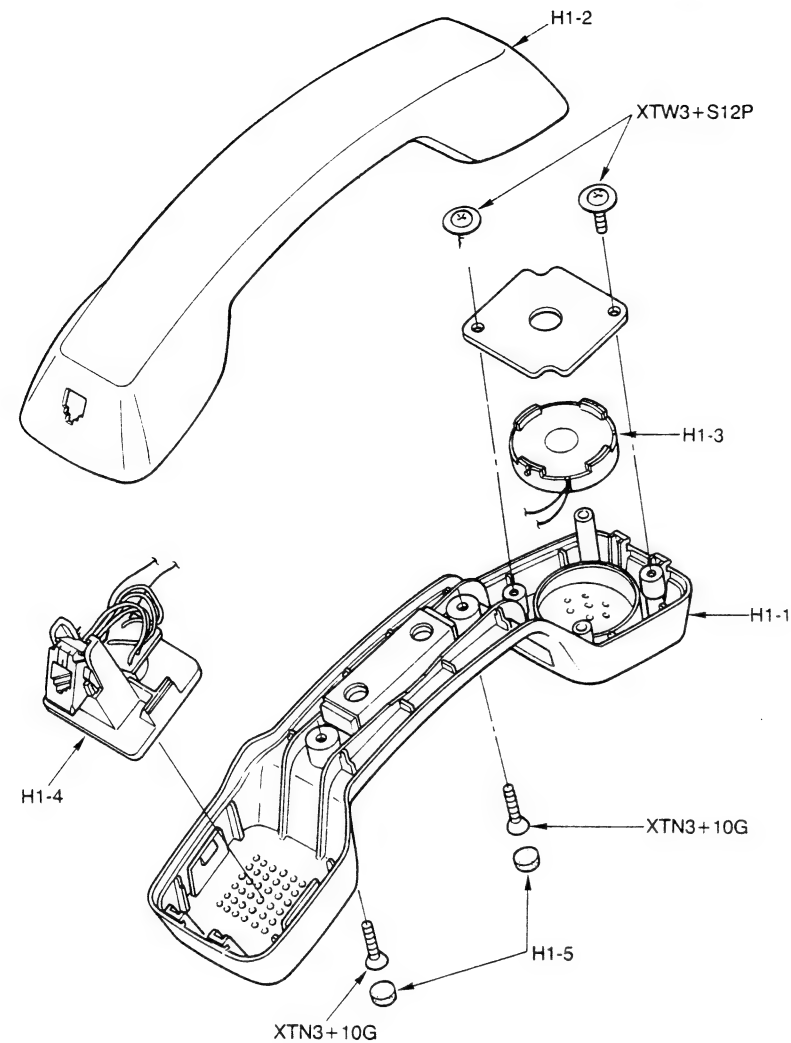


Fig. 13

CONNECTION

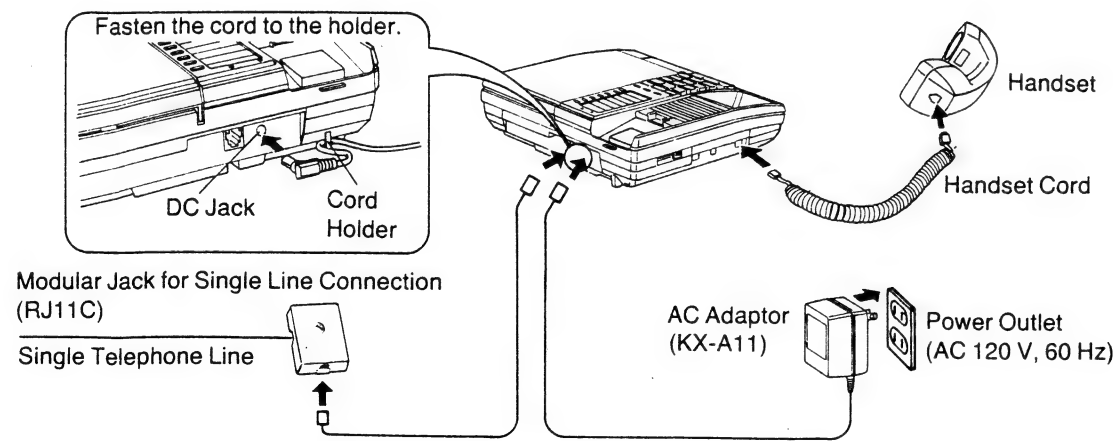


Fig. 14

MEASUREMENT AND ADJUSTMENT METHOD

- Notes:
- 1. Make sure the heads are clean.
  - 2. Make sure the capstan and pressure roller are clean.
  - 3. Room temperature for measuring and adjusting: 20±5°C (68±9°F)
  - 4. Test equipments are not treated as replacement parts.

ITEM	MEASUREMENT & ADJUSTMENT	REMARKS
Head azimuth adjustment	<p><b>A. Record/playback head for incoming message cassette</b></p> <ol style="list-style-type: none"><li>1. Playback test tape (QZZCWAT 3 kHz)</li><li>2. Adjust screw (A) shown in fig. B for maximum output at SP terminal.</li></ol> <p>(Test equipment connection is shown below.)</p> <p>Fig. A</p> <p>Test tape Playback mode VTVM Oscilloscope</p> <p>Fig. B</p> <p><b>B. Record/Playback head for outgoing message cassette</b></p> <ol style="list-style-type: none"><li>1. Playback test tape (PQJN17Z 3 kHz)</li><li>2. Adjust screw (A) shown in fig. B for maximum output at SP terminal.</li></ol> <p>(Test equipment connection is shown in fig. A)</p>	<p>• Record/playback head for incoming message and outgoing message.</p>

ADJUSTMENT

Perform the following adjustment after replacing IC4 and VR1.

<b>Test Equipment:</b>
Loop Simulator RC Oscillator VTVM
<b>Preparation:</b>
<ol style="list-style-type: none"><li>1. Set the unit's controls as follows: A. SP-PHONE SWITCH—"ON" B. VOLUME CONTROL—"MAX"</li><li>2. Connect Test Points ▼-▼ and disconnect the microphone.</li><li>3. Set the variable resistor of the loop simulator to maximum resistance (line electric current 40mA).</li><li>4. Connect the unit to the loop simulator.</li><li>5. Make adjustment in a quiet room.</li><li>6. After adjustment are made, disconnect Test Points ▼-▼ and connect the microphone.</li></ol>
<b>Transmission Level:</b>
<ol style="list-style-type: none"><li>1. Set the loop simulator selector switch to "TX".</li><li>2. Connect the RC Oscillator to Test Point ▼(-)-▼(+), and connect an electrolytic capacitor (50 V, 1 μF) as shown below.</li><li>3. Set RC Oscillator to 1 kHz, -56 dBm.</li></ol> <p>1 kHz, -56 dBm 50 V 1 μF</p> <ol style="list-style-type: none"><li>4. Connect the VTVM to loop simulator.</li><li>5. Adjust VR1 for a reading of -18 dBm ±0.5 dB on the VTVM.</li></ol>

Please refer to Circuit Board and wiring Connection Diagram which is located test points (▼).

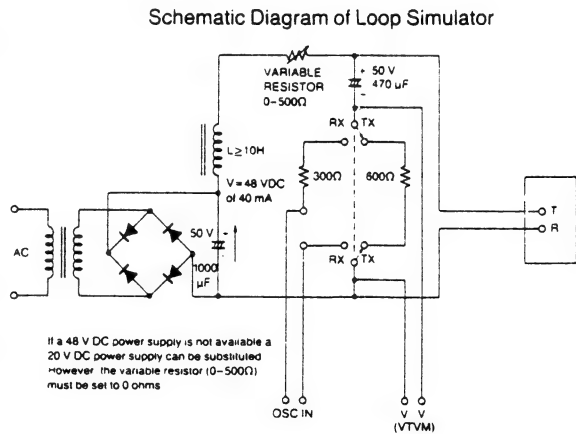


Fig. 15

IC BLOCK DIAGRAM

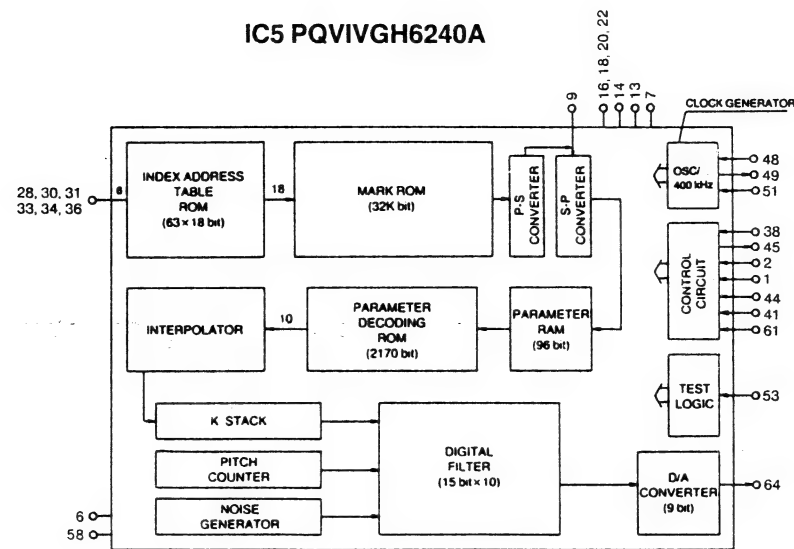


Fig. 10

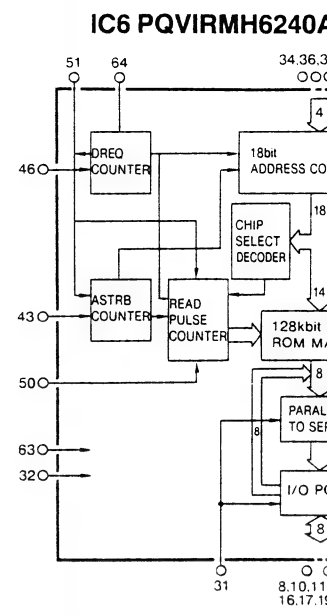
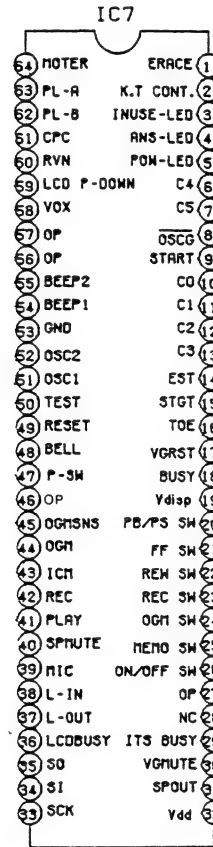


Fig. 11

CPU DATA

Part No.: PQVI4042SE88  
Power Supply: 5±0.5 V  
Program ROM: 8192×10 bit  
Inside Data RAM: 512×4 bit  
V<sub>ss</sub>: 0 V



Pin No.	Function	High	Low	Pin No.	Function	High	Low
1	Erase	ON	OFF	33	SCK		
2	ADT Control		Key Tone Output	34	SI		
3	IN-Use LED			35	SO		
4	Answer LED	ON	OFF	36	LCD-Busy		Busy
5	Power LED			37	Line-Out	Line Out ON	Line Out OFF
6	C4			38	Line-In	Line In ON	Line On OFF
7	C5			39	Mic	Mic ON	Mic OFF
8	OSCG		ON	40	SP-Mute	Mute ON	Mute OFF
9	Start	ON		41	Play		
10	C0,D0			42	REC	ON	OFF
11	C1,D1			43	ICM		
12	C2,D2			44	OGM		
13	C3,D3			45	OGM SNS	OFF	ON
14	EST	Enable to Tone Input		46	Time Stamp Option	Enable	Disable
15	STGT	ON	OFF	47	PS-SW	OFF	ON
16	TOE			48	Bell	Disable to Bell	Enable to Bell
17	VGRST			49	Reset	ON	
18	Busy		Busy	50	Test		
19	Vdisp			51	OSC1		
20	PB/Pause			52	OSC2		
21	FF			53	GND		
22	REW	OFF	ON	54	Beep1		
23	REC			55	Beep 2		
24	OGM			56	DSC Option	Enable to transfer even when disconnected	Disable to transfer when disconnected
25	MEMO	OFF	ON	57	BLL Option	Normal receiving	Receiving at the end of ringing
26	ON/OFF	OFF	ON	58	Vox	Disable to sound	Enable to sound
27	Vox Option	6sec	4sec	59	Power Down	Enable to Power	Disable to Power
28	N.C.			60	RVN		
29	ITS-Busy	Busy		61	CPC		Enable to CPC
30	VG-Mute	ON	OFF	62	PL-B		
31	SPOUT			63	PL-A	ON	OFF
32	Vcc			64	Motor		

Pin No.	Function
1	GND Termin
2	Key-Scan C
3	Key-Scan C
4	Key-Scan C
5	Key-Scan C
6	Serial Clock
7	Serial Data
8	Serial Data
9	Audible Ton
10	Audible Ton
11	System Res
12	SP-Phone C
13	Mute/Hold C
14	Transfer Co
15	
16	Option Data
17	Option Data
18	Tone/Pulse
19	Hook Signa
20	Key-Scan C
21	Key-Scan C
22	Key-Scan C
23	Ex-Hook Sig
24	Key Input
25	Key Input
26	Key Input
27	Key Input
28	Tip Ring Co
29	Speaker Mu
30	Mic Mute C
31	SP-Phone/h
32	AC Power D
33	Stop Signa
34	
35	Tone Detect
36	Pulse Dial C
37	DTMF Signa
38	System Clo
39	System Clo
40	System Clo
41	Serial-Busy
42	+ Power Sou

QVIRMH6240A

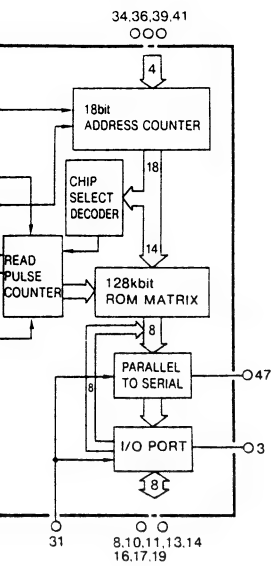


Fig. 11

IC8 PQVIMT8870BC

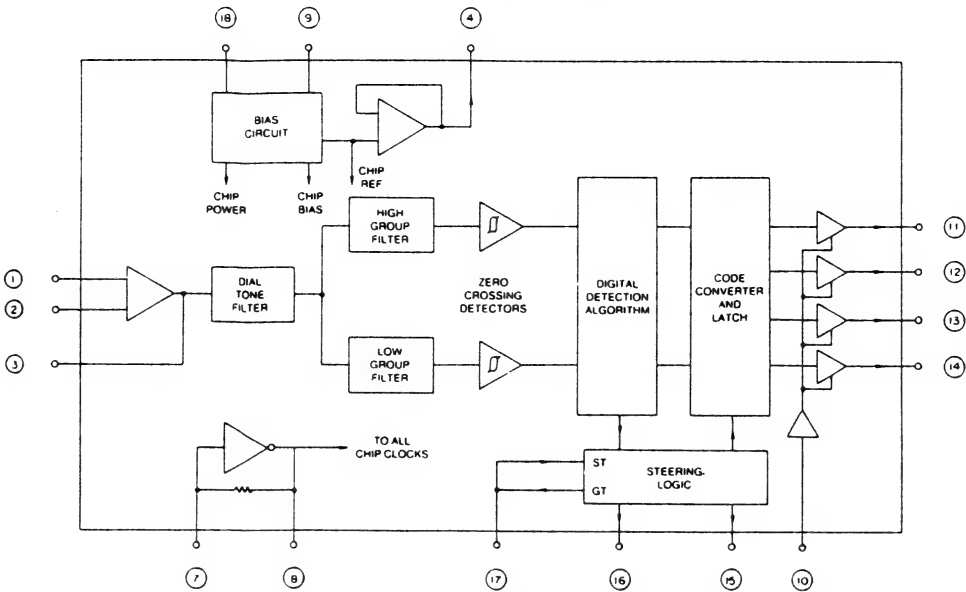


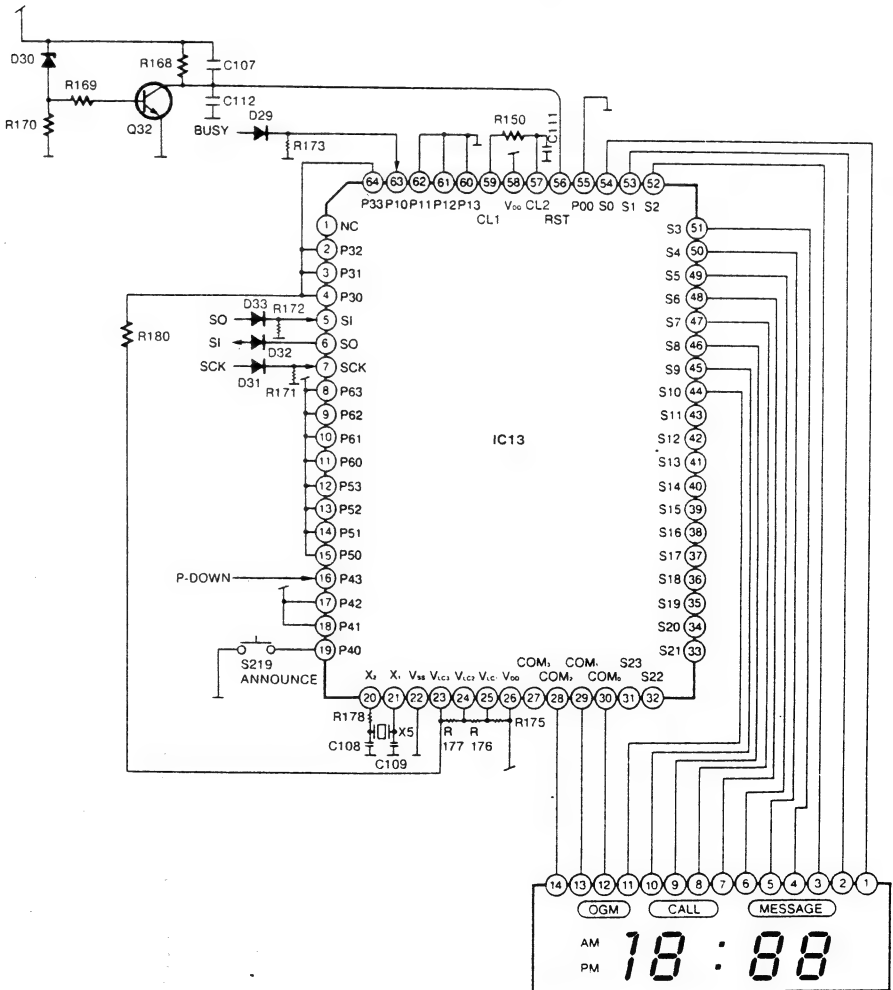
Fig. 12

IC3: MN158413KTS  
Memory: 16 digit 32 station  
Clock Frequency: 3.58 MHz  
Power Supply Voltage: 2-5.5 V

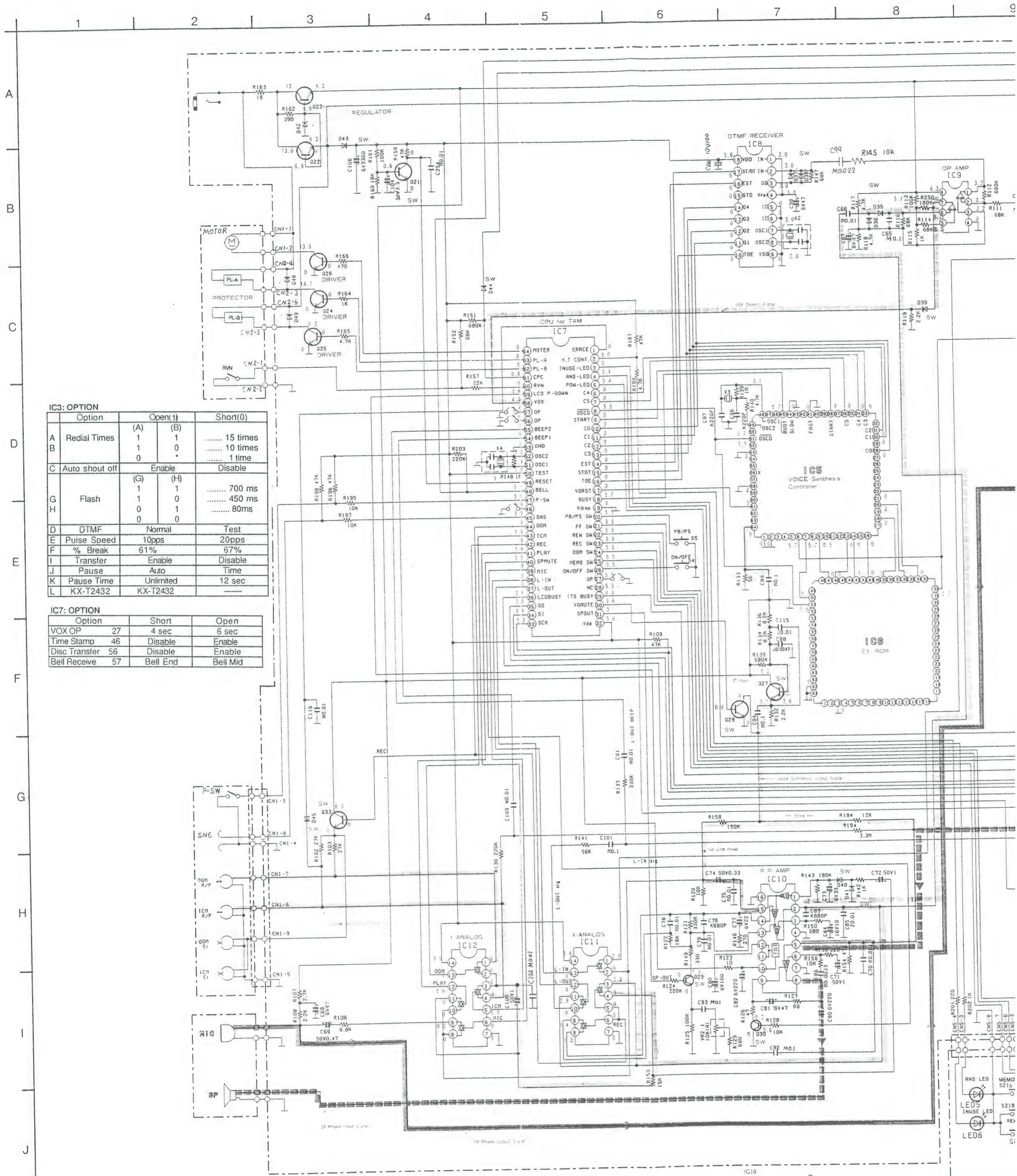
- Circuit Operation: (IC3):**
- Pin 2-5 output the scanning signal to the Dial, Lower, Redial, Voice memo check and the Pause switch.
  - Pin 6 inputs the standard clock from the TAM's CPU.
  - Pin 7 outputs the data to the TAM's CPU.
  - Pin 8 inputs the data from the TAM's CPU.
  - Pin 10 outputs the audible tone. the audible Tone is outputted from this port as a single signal.
  - Pin 11 inputs the reset signal to CPU. When reset, its input is low level.
  - Pin 12,13 and 14 outputs the speakerphone on/off, the Mute/Hold and the transfer LED indicators. While the LED lights the outputs are at the Low level.
  - Pin 16 and 17 are the option data input ports.
  - Pin 18 inputs the Tone/Pulse switch signal. When pulse, it inputs a low level.
  - Pin 19 inputs the Hook switch signal. When off-hook, it inputs a low level.
  - Pin 20-22 output the scanning signal to station key, the Program, Hold, Auto, Mute, Flashe and the Speakerphone ON/OFF switch.
  - Pin 23 inputs the hold cancellation detector signal. When the hold switch is cancelled, it inputs a high level.
  - Pin 24-27 are the key data input ports.
  - Pin 28 outputs the tip ring control signal. when the Hold switch is pressed or speakerphone mode (Handset is on-hook), it outputs a high level.
  - Pin 29,30 are the muting control signal. During muting, its output is a high level.
  - Pin 31 outputs the speakerphone/handset selector signal. (High; Speakerphon, Low; Handset)
  - Pin 32 inputs a high level when power is applied from the AC Adaptor.
  - Pin 33 inputs the stop detector signal (to make the memory backup condition to the CPU). When inputting the stop detector, its input is a high level.
  - Pin 35 is the detector input for each tone from the telephone line. When a tone signal is detected, its level is high.
  - Pin 36 is an output to control the Make/Brake of the pulse dialing. During Brake, its output is a low level.
  - Pin 37 is the terminal for the DTMF signal output.
  - Pin 41 inputs the serial-busy signal from the TAM's CPU. When inputting the serial-busy signal, its input is a low level.
  - Pin 42 is the + power supply input of the CPU.

Function	High	Low
GND Terminal		
Key-Scan Output		
Key-Scan Output	High-imp	Active
Key-Scan Output		
Key-Scan Output		
Serial Clock		
Serial Data Output	High-imp	Active
Serial Data Input		
Audible Tone Control Output	Usually	Active
Audible Tone Output		Usually
System Reset Signal Input		
SP-Phone ON/OFF LED Control Output	OFF	ON
Mute/Hold Control Output		
Transfer Control Output		
Option Data Input	Disable	Enable
Option Data Input		
Tone/Pulse Select Input	Tone	Pulse
Hook Signal Input	ON-Hook	OFF-Hook
Key-Scan Output		
Key-Scan Output	High-imp	Active
Key-Scan Output		
Ex-Hook Signal Input	OFF Hook	ON Hook
Key Input		
Key Input	Disable	Enable
Key Input		
Key Input		
Tip Ring Control Output		
Speaker Mute Control Output	ON	OFF
Mic Mute Control Output		
SP-Phone/Handset Control Output	SP-Phone	Handset
AC Power Detect Input	Usually	
Stop Signal Input	Stand by	Normal
Tone Detect Signal Input	Usually	Tone Input
Pulse Dial Output	Make	Break
DTMF Signal Output		Usually
System Clock		
System Clock		
System Clock(1/64)		
Serial-Busy Signal Input	Usually	Active
+ Power Source Terminal		

IC13 CONNECTIONS







IC3: OPTION

Option	Open(1)	Short(0)
A Redial Times	(A) 1	(B) 1
B	1	0
C Auto shout off	Enable	Disable
G Flash	1	1
H	1	0
	0	1
	0	0
D DTMF	Normal	Test
E Pulse Speed	10pps	20pps
F % Break	61%	67%
I Transfer	Enable	Disable
J Pause	Auto	Time
K Pause Time	Unlimited	12 sec
L KX-T2432	KX-T2432	

IC7: OPTION

Option	Short	Open
VOX OP	27 4 sec	6 sec
Time Stamp	46 Disable	Enable
Disc Transfer	56 Disable	Enable
Bell Receive	57 Bell End	Bell Mid

Notes:

1. S1: Hook switch in "OFF-HOOK" position.

2. S2: Ringer volume selector switch in "HIGH" position.

3. S3: Tone/Pulse select switch in "PULSE" position.

4. S4: Power on/off switch in "OFF" position.

5. S5: Playback/Pause switch.

6. S6: Speakerphone on/off switch.

7. S7: Hold switch.

8. S8: Mute switch.

9. S11: Sensing switch.

10. S12: Head Position switch.

11. S13: Reed switch.
12. S201- S204: Station switch.

13. S205: Clear switch.

14. S206: Memory switch.

15. S207: Lower switch.

16. S208: Auto switch.

17. S209: Program switch.

18. S210: Voice check switch.

19. S211: Redial switch.

20. S212: Flash switch.

21. S213: Pause switch.
22. S214: REC switch.

23. S215: OGM switch.

24. S216: Memo switch.

25. S217: Fast forward switch

26. S218: Rewind switch.

27. S219: Announs switch.

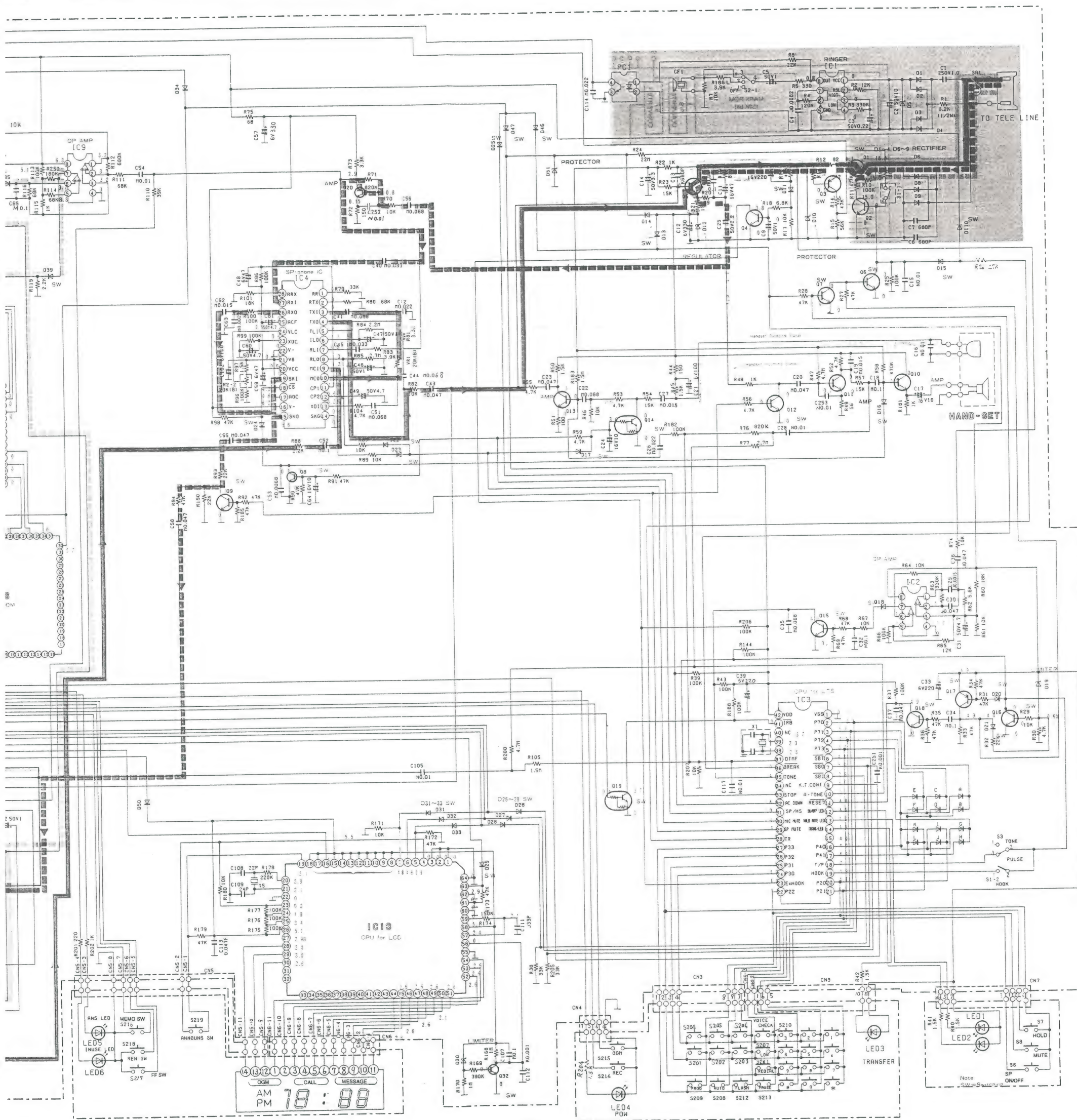
28. S220- S231: Dialing switch.

29. DC voltage measurement are taken with electronic voltmeter from negative line.



SCHEMATIC DIAGRAM

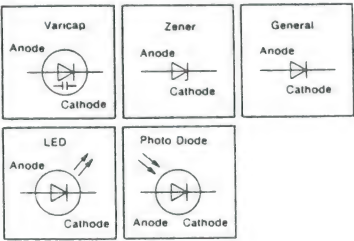
8 9 10 11 12 13 14 15 16 17



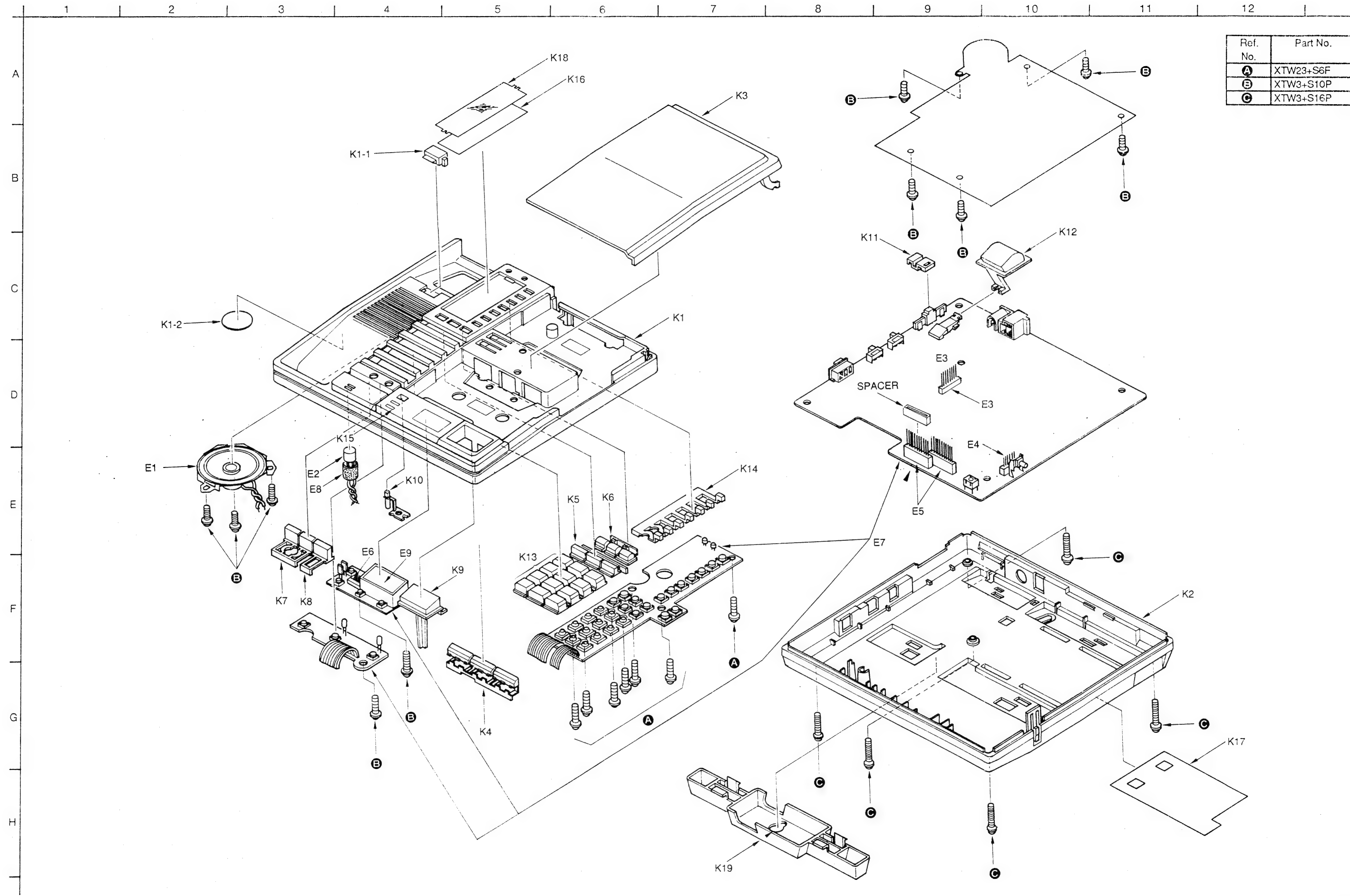
This schematic diagram may be modified at any time with the development of new technology.

Important safety notice

The shaded area on this schematic diagram incorporates special features important for protection from fire and electrical shock hazards. When servicing it is essential that only manufacturer's specified parts be used for the critical components in the shaded areas of the schematic.



CABINET AND ELECTRICAL PARTS LOCATION





## EXPLODED VIEW (DECK)

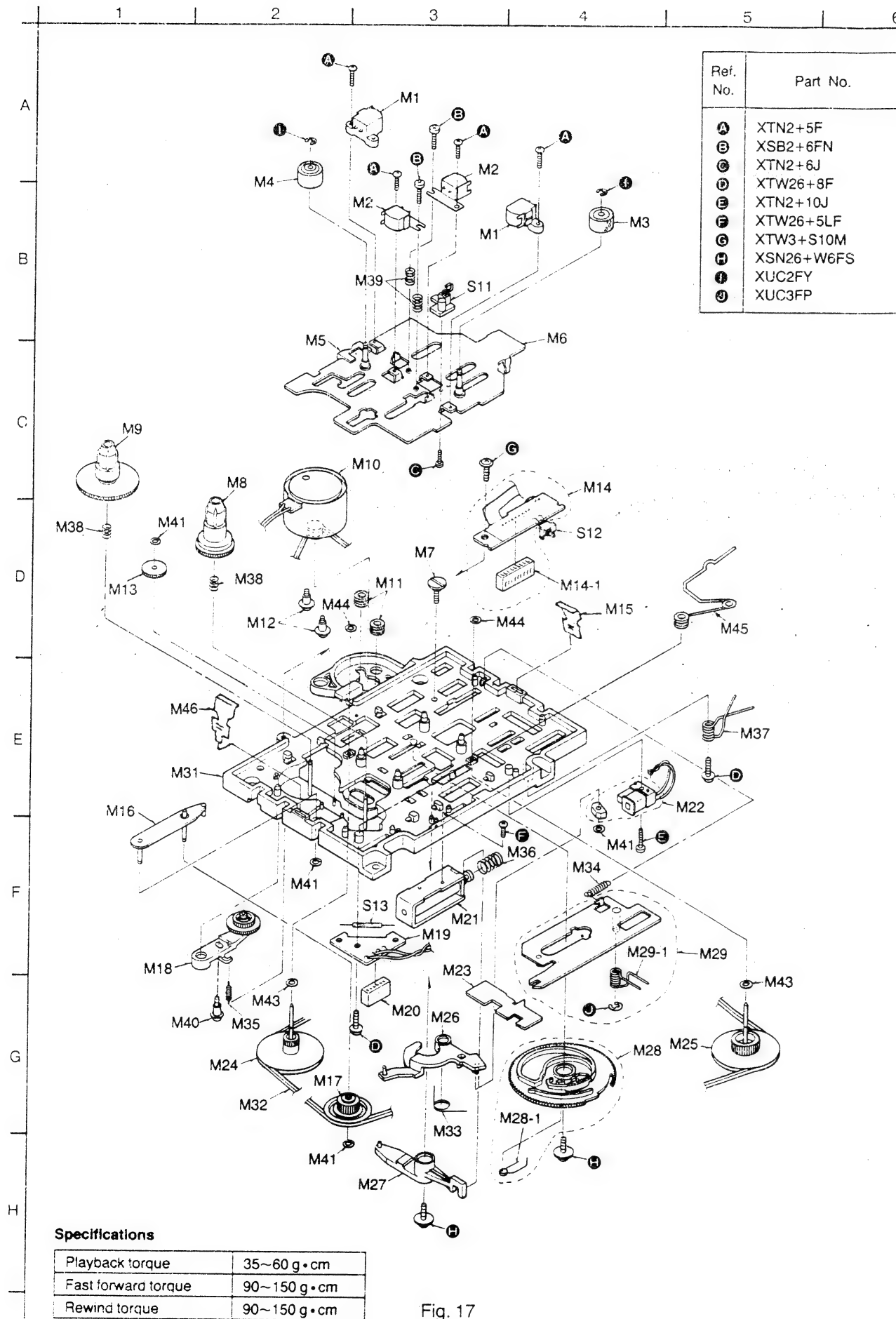


Fig. 17

## ACCESSORIES & PACKING MATERIALS

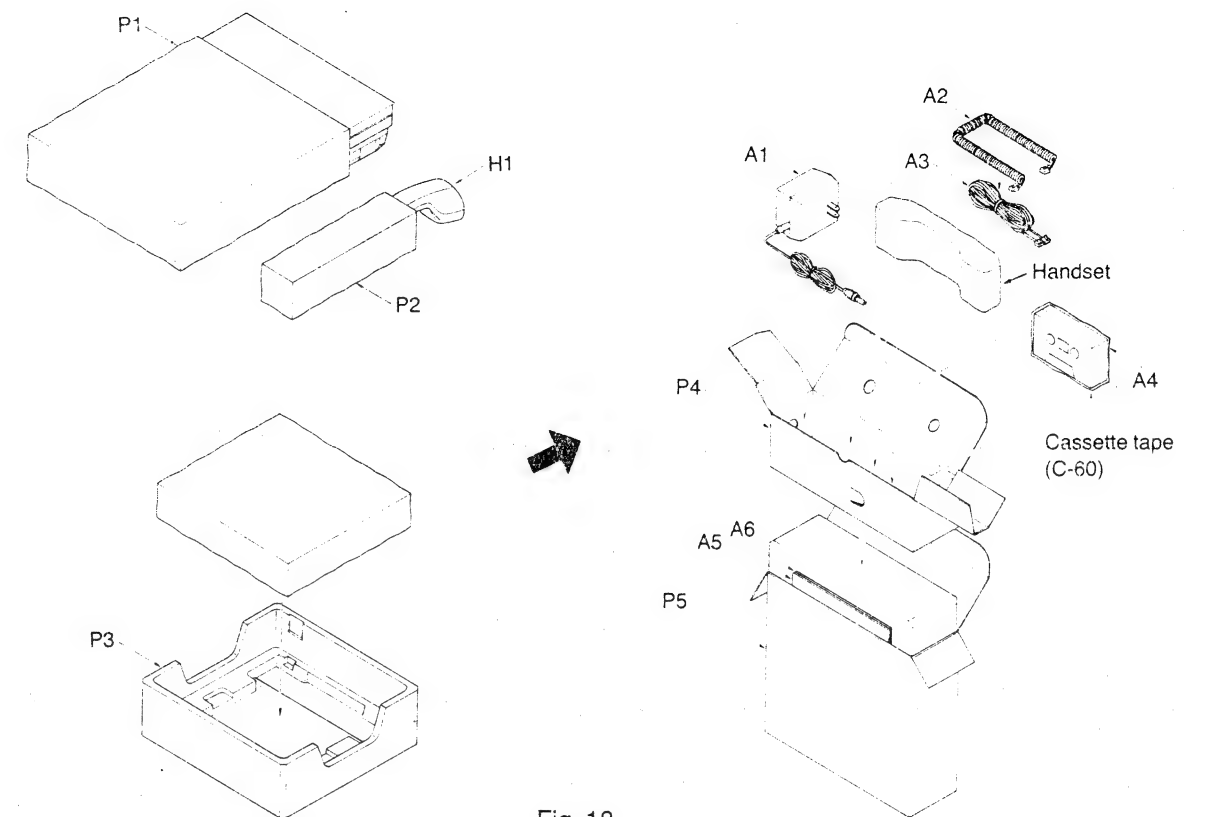


Fig. 18

## EXTENSION CORD CONNECTING METHOD

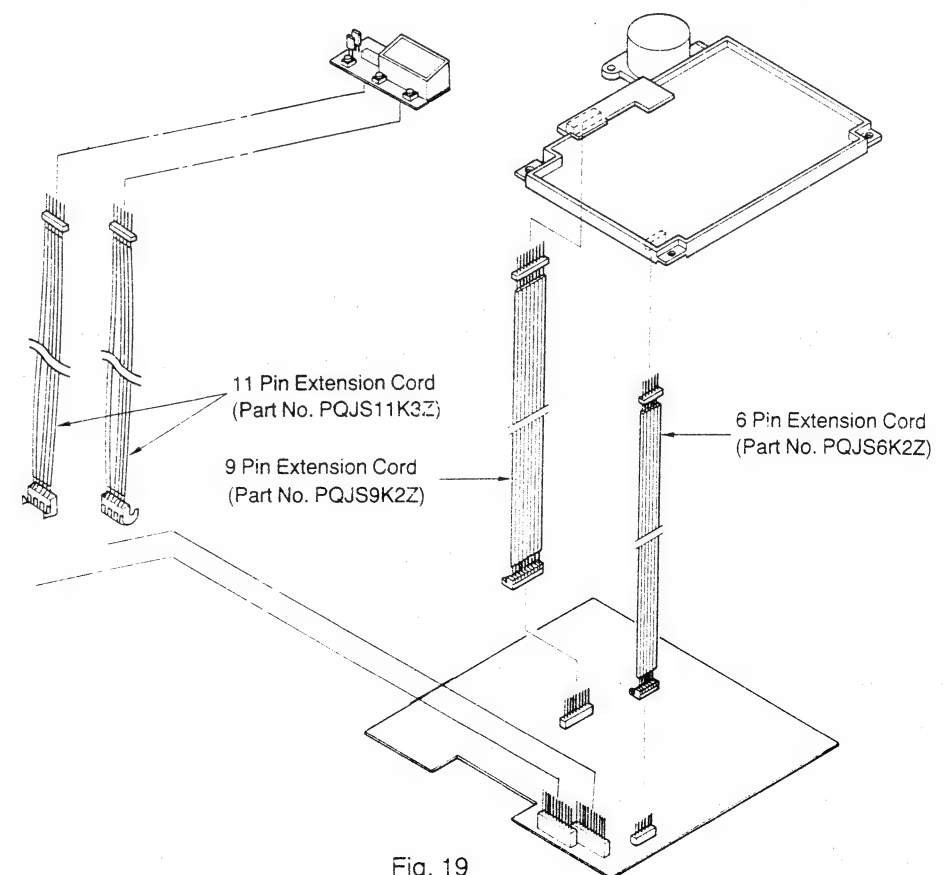


Fig. 19

## REPLACEMENT PARTS LIST

Model KX-T2432

## Notes:

- Printed circuit board assembly with mark (NLA) in no longer available after production discontinuation of the complete set.
- Important safety notice.  
Components identified by the  $\Delta$  mark special characteristics important for safety.  
when replacing any of these components, use only manufacturer's specified parts.
- The S mark indicates service standard parts and may differ from production parts.
- RESISTORS & CAPACITORS  
Unless otherwise specified.  
All resistors are in ohms ( $\Omega$ ) k=1000 $\Omega$ , M=1000k $\Omega$   
All capacitors are in MICRO FARADS ( $\mu$ F) P=0.001 $\mu$ F  
\*Type & Wattage of Resistor

## Type

ERC:Solid	ERX:Metal Film	ERDS,PQRD:Carbon
ERD:Carbon	ERG:Metal Oxide	PQRQ:Fusible Resistor
RRD:Chip	ERO:Metal Film	PQ4R:Chip

## Wattage

10,16:1/8W	14,25:1/4W	12:1/2W	1:1W	2:2W	3:3W
------------	------------	---------	------	------	------

## \*Type &amp; Voltage of Capacitor

## Type

ECFD:Semi-Conductor	ECED,ECKD,PQCB: Ceramic
EQCS:Styrol	ECQM,ECQV,ECQE : Polyester
PQCBX,ECUV:Chip	ECEA,ECSZ : Electrolytic
ECMS:Mica	ECQP : Polypropylene

## Voltage

ECQ Type	ECQG ECQV Type	ECSZ Type	Others	
1H: 50V	05: 50V	0F:3.15V	0J :6.3V	1V :35V
2A:100V	1:100V	1A:10V	1A :10V	50,1H:50V
2E:250V	2:200V	1V:35V	1C :16V	1J :63V
2H:500V		0J:6.3V	1E,25:25V	2A :100V

Ref. No.	Part No.	Part Name & Description	Pcs
MECHANICAL PARTS			
M1	PQJH6E4Z	Erase Head	2
M2	PQJH1E6Z	P/R Head	2
M3	PQFI1004Y	Pinch Roller (ICM)	1
M4	PQFI1004Z	Pinch Roller (OGM)	1
M5	PQFW37Z	Guide Rib, Position Switch	1
M6	PQFD9910Z	Head Base Assembly	1
M7	PQHD17Z	Screw	1
M8	PQFR9909Z	Reel Table (Supply) Assembly	1
M9	PQFR9910Z	Reel Table (Takeup) Assembly	1
M10	PQFM9908Z	Motor Assembly	1
M11	PQFI4Z	Rubber Spacer, Motor	2
M12	PQHD4Z	Screw, Motor Mtg	2
M13	PQFG45Z	Gear, FF	1
M14	PQFZ9903Z	Flexible P.C.Board Assembly	1
M14-1	PQJS9B30Z	Connector, 9P	1
M15	PQFD76Z	Leaf Spring	1
M16	PQFD9908Z	F/R Lever Assembly	1
M17	PQFQ9901Z	F/R Pulley Assembly	1
M18	PQFR9911Z	Play Arm Assembly	1
M19	PQUP568Z	P.C.Board	1
M20	PQJS6B30Z	Connector, 6P	1
M21	PQFP119Z	Plunger-a	1
M22	PQFP121Z	Plunger-B	1
M23	PQFD70Y	Operation Plate	1
M24	PQFF9905Z	Flywheel (ICM) Assembly	1
M25	PQFF9906Z	Flywheel (OGM) Assembly	1
M26	PQFY9905Y	Trigger Lever-B Assembly	1
M27	PQFY9904Y	Trigger Lever-A Assembly	1
M28	PQFG9903Z	Cam Gear Assembly	1
M28-1	PQFS97Z	Spring, Cam Gear	1
M29	PQFD9907Z	Assistant Plate Assembly	1
M29-1	PQFS92Z	Spring, Assistant Plate	1
M30	Not Used		
M31	PQFC9908Z	Mechanism Base Assembly	1
M32	PQFB2Y	Belt	1
M33	PQFS87Z	Spring, Trigger Lever-A	1
M34	PQFS93Z	Spring, Assistant Plate	1
M35	PQFS88Z	Spring, Play Arm	1

Ref. No.	Part No.	Part Name & Description	Pcs
M36	PQFS86Z	Spring, Plunger-A	1
M37	PQFS94Z	Spring, Head Base	1
M38	PQFS90Z	Spring, Reel Table	2
M39	PQFS98Z	Spring, Head Azimuth	2
M40	PQHD18Z	Screw	1
M41	PQFN7Z	Washer	4
M42	Not Used		
M43	PQFN12Z	Washer	2
M44	PQFN16Z	Washer	2
M45	PQFS106Z	Spring	1
M46	PQFD77Z	Spring	1
INTEGRATED CIRCUITS, TRANSISTORS & DIODES			
IC1	PQVIBA6565A	IC	1 $\Delta$
IC2	AN6562	IC	1
IC3	MN158413KTS	IC	1
IC4	PQVISC77655S	IC	1
IC5	PQVIVGH6240A	IC	1
IC6	PQVIRMH6240A	IC	1
IC7	PQVI4088SC24	IC	1
IC8	PQVIMT8870BC	IC	1
IC9	PQVINJM4558D	IC	1
IC10	PQVITA7628P	IC	1
IC11,12	PQVITC4066BP	IC	2
IC13	PQVIO1G097	IC	1
Q1	2SA1625	Transistor(Si)	1 $\Delta$
Q2	2SD662B	Transistor(Si)	1 $\Delta$
Q3,17	2SA937	Transistor(Si)	2
Q4,6-10,12	2SC2021	Transistor (Si)	20
13,15,16			
18,20,21			
27-30,32,			
33			
Q5	2SC2120	Transistor(Si)	1
Q14	PQVTBB1L3N	Transistor(Si)	1
Q19	PQVDTCT114	Transistor(Si)	1
Q22,23	2SD1266	Transistor(Si)	2
Q24-26	2SD1225M	Transistor(Si)	3
D1-4,8,	1SS131	Diode (Si)	32 $\Delta$
11,13,15,,			
17,18,20-			
24,26-28,			
34-41,44,			
46-49,110			
D5	MA4300	Diode(Si)	1
D6-9	PQVD1N4004	Diode (Si)	4
D10	MA4180	Diode(Si)	1
D12	MA7051	Diode (Si)	1
D14	MA700	Diode (Si)	1
D19,30,40	PQVDHZ2CLL01	Diode (Si)	3
D29,31-33,	1S1588	Diode (Si)	6
45, 50			
D42	PQVDMTZ6R8	Diode(Si)	1
D43	1S2076	Diode(Si)	1
D51	MA4062	Diode(Si)	1
LED1,2	PQVDSLPL135BA	LED	2
LED3,4	PQVDBR2434D	LED	2
LED5	PQVDSLZ1558B1	LED	1
LED6	PQVDSLZ2558B1	LED	1
JACKS			
JJ1	PQJ2HA1Z	Jack, DC Telephone	1 $\Delta$
JJ2	PQJ1TB10Z	Jack, Handset	1

Ref. No.	Part No.	Part Name & Description	Pcs
<b>SWITCHES</b>			
S1	ESE14A211	Switch, Hook	1
S2	PQSS3A17Z	Switch, Ringer	1
S3	PQSS2A27Z	Switch, Tone/Pulse	1
S4	EVQ-QBH08T	Switch, Power On/Off	1
S5	PQSH1A13Z	Switch, Playback/Pause	1
S6-8,201-219	EVQQS204	Switch, SP-Phone On/Off, Hold, Mute, etc.	22
S11	PQFA9901Y	Switch, Sensing (for Deck)	1
S12	PQSH1A17Z	Switch, Head position (for Deck)	1
S13	PQSE17Y	Switch, Reed (for Deck)	1
S220-231	PQSH1A33Z	Switch, Dialing	12
<b>OTHERS</b>			
SA1	PQVDSAE310	Varistor (Surgeabsorber)	S 1
VR1	PQNB3A00B24M	Variable Resistor	S 1
VR2	PQVAM2A14B24A	Variable Resistor	1
X1,2	PQVBFC3584A1	Ceramic Filter	2
X3	PQVFCB400P	Ceramic Filter	S 1
X4	PQVBFC3824A1	Ceramic Filter	1
X5	PQVCL3276N6Z	Crystal Oscillator	1
PC1	PQVIPC817K	Tranducer (Photo Coupler)	1
<b>CABINET PARTS</b>			
K1	PQYMT2432M	Upper Cabinet Assembly	1
K1-1	PQKE42Z2	Hanger	1
K1-2	EFBS19C01	Buzzer	1
K2	PQYFT2432M	Lower Cabinet Assembly	1
K3	PQYQT2432M	Cassette Lid Assembly	1
K4	PQBCX61Z	Button, Memo, F/F, Rewind	1
K5	PQBCX60Z	Button, Pause, Redial, Flash	1
K6	PQBCX62Z	Button, Prog. Auto, Voice Memo Check	1
K7	PQBCX63Z	Button, Mute, Hold	1
K8	PQBC178Z	Button, Speakerphone	1
K9	PQBC179Z	Button, Playback/Pause	1
K10	PQBC180Z	Button, Announce	1
K11	PQBD97Z	Knob, Volume	1
K12	PQBE17Z	Button, Hook	1
K13	PQBCX55Z	Button, 12Key (Assembly)	1
K14	PQBCX59Z	Button, Dialer	1
K15	PQGP66Z	L.C.D.Panel	1
K16	PQHP589Z	Memory Card	1
K17	PQHP590Z	Telephone Card	1
K18	PQHR5081Z	Transparent Cover	1
K19	PQKL20Z	Stand	1
<b>HANDSET PARTS</b>			
H1	PQJX2PM404W	Handset Assembly	1
H1-1	PQYM2PM404W	Lower Handset Cabinet	1
H1-2	PQKF110Z0	Upper Handset Cabinet	1
H1-3	PQWHJX404W	Speaker Assembly	1
H1-4	PQWMJX404W	Microphone Assembly	1
H1-5	PQHG695Z	Rubber Cap	2
<b>ELECTRICAL PARTS</b>			
E1	PQAS65P19Z	Speaker, 6.5cm(2.5") 32Ω	1
E2	RJM142Z	Microphone	S 1
E3	PQJP9D56Z	Connector, 9pin (CN1)	1
E4	PQJP6D57Z	Connector, 6pin (CN2)	1
E5	PQJP11D38Z	Connector, 11pin (CN5,6)	2
E6	PQJS11X41Z	Connector, 11pin (CN5,6)	2
E7	PQWPT2432M	Main P.C.Board Assembly (NLA)	1
E8	PQHG503Z	Rubber Parts, Microphone Cover	1
E9	PQADLT3C202B	Liquid crystal Display (LCD1)	1

Ref. No.	Part No.	Part Name & Description			Pcs	
ACCESSORIES						
A1	KX-A11	AC Adaptor			1	
A2	PQJA30V	Handset Cord			1	
A3	PQJA59Y	Telephone Cord		S	1	
A4	PQJN4Z	Endless Cassette Tape (30 sec)			1	
A5	PQQX5548Z	Instruction Book			1	
A6	PQQX1398Z	Dial Card			1	
PACKING MATERIALS						
P1	XZB23X30A01	Protection Cover (for Set)			1	
P2	PQPH75Y	Protection Cover (for Handset)			1	
P3	PQPN815Z	Pad			1	
P4	PQPN816Z	Accessory Box			1	
P6	PQPK569Z	Gift Box			1	
Ref. No.	Part No.	Value	Ref. No.	Part No.	Value	
RESISTORS						
R1	ERDS1TJ622	6.2k	△	R53	ERD16TJ472	4.7k
R2	ERD16TJ123	12k	△	R54	ERD16TJ123	12k
R3	ERD16TJ334	330k	△	R55	ERD16TJ472	4.7k
R4	ERD16TJ124	120k	△	R56	ERD16TJ472	4.7k
R5	ERD10TLJ331	330	△	R57	ERD16TJ153	15k
R6	Not Used			R58	ERD16TJ474	470k
R7	ERD16TJ103	10k	△	R59	ERD16TJ472	4.7k
R8	ERD16TJ223	22k	△	R60	ERD16TJ183	18k
R9	ERD10TLJ683	68k	△	R61	ERD16TJ103	10k
R10	ERD16TJ104	100k	△	R62	ERD16TJ562	5.6k
R11	ERD16TJ472	4.7k	△	R63	ERD10TLJ334	330k
R12	ERDS1TJ820	82		R64	ERD10TLJ103	10k
R13	ERD16TJ102	1k		R65	ERD16TJ123	12k
R14	ERD16TJ473	47k		R66	ERD16TJ104	100k
R15	ERD16TJ563	56k		R67	ERD10TLJ103	10k
R16	ERD16TJ473	47k		R68	ERD10TLJ473	47k
R17	ERD16TJ103	10k		R69	ERD10TLJ473	47k
R18	ERD16TJ682	6.8k		R70	ERD16TJ103	10k
R19	ERD16TJ821	820		R71	ERD10TLJ824	820k
R20	ERD10TLJ390	39		R72	ERD10TLJ151	150
R21	ERD10TLJ150	15		R73	ERD16TJ332	3.3k
R22	ERD16TJ102	1k		R74	ERD10TLJ103	10k
R23	ERD16TJ153	15k		R75	ERD10TLJ680	68
R24	ERC14GM226	22M		R76	ERD16TJ824	820k
R25	ERD10TLJ104	100k		R77	ERD16TJ275	2.7M
R26	ERD10TLJ473	47k		R78	Not Used	
R27	ERD16TJ473	47k		R79	ERD10TLJ333	33k
R28	ERD16TJ473	47k		R80	ERD10TLJ683	68k
R29	ERD16TJ103	10k		R81	ERD10TLJ332	3.3k
R30	ERD16TJ472	4.7k		R82	ERD16TJ103	10k
R31	ERD16TJ473	47k		R83	ERD10TLJ392	3.9k
R32	ERD16TJ223	22k		R84	ERD10TLJ225	2.2M
R33	ERD16TJ473	47k		R85	ERD16TJ275	2.7M
R34	ERD16TJ473	47k		R86	ERD16TJ104	100k
R35	ERD16TJ473	47k		R87	ERD10TLJ103	10k
R36	ERD16TJ473	47k		R88	ERD25TJ222	2.2k
R37	ERD10TLJ104	100k		R89	ERD10TLJ103	10k
R38	ERD10TLJ333	33k		R90	ERD16TJ473	47k
R39	ERD10TLJ104	100k		R91	ERD16TJ473	47k
R40	ERD16TJ152	1.5k		R92	ERD16TJ473	47k
R41	ERD16TJ152	1.5k		R93	ERD16TJ223	22k
R42	ERD25TJ152	1.5k		R94	ERD16TJ473	47k
R43	ERD10TLJ104	100k		R95	Not Used	
R44	ERD16TJ151	150		R96	ERD16TJ104	100k
R45	ERD16TJ152	1.5k		R97	ERD10TLJ152	1.5k
R46	ERD16TJ103	10k		R98	ERD10TLJ473	47k
R47	ERD16TJ475	4.7M		R99	ERD16TJ104	100k
R48	ERD16TJ102	1k		R100	ERD10TLJ104	100k
R49	ERD16TJ560	56		R101	ERD10TLJ183	18k
R50	ERD16TJ152	1.5k		R102	ERD16TJ273	27k
R51	ERD10TLJ101	100		R103	ERD16TJ273	27k
R52	ERD16TJ472	4.7k		R104	ERD16TJ472	4.7k

Ref. No.	Part No.	Value	Ref. No.	Part No.	Value
R105	ERD25TJ155	1.5M	R156	ERD10TLJ103	10k
R106	ERD16TJ682	6.8k	R157	ERD25TJ223	22k
R107	ERD25TJ272	2.7k	R158	ERD25TJ154	150k
R108	ERD16TJ222	2.2k	R159	ERD16TJ473	47k
R109	ERD16TJ473	47k	R160	ERD16TJ183	18k
R110	ERD16TJ393	39k	R161	ERD16TJ104	100k
R111	ERD25TJ683	58k	R162	ERDS1TJ391	390
R112	ERD10TLJ684	680k	R163	PQRQM2VJ180	18
R113	ERD16TJ104	100k	R164	ERD16TJ102	1k
R114	ERD16TJ683	68k	R165	ERD16TJ472	4.7k
R115	ERD16TJ102	1k	R166	ERD10TLJ471	470
R116	ERD10TLJ683	68k	R167	Not Used	
R117	ERD10TLJ472	4.7k	R168	ERD16TJ105	1M
R118	ERD10TLJ472	4.7k	R169	ERD10TLJ394	390k
R119	ERD10TLJ222	2.2k	R170	ERD16TJ105	1M
R120	ERD10TLJ103	10k	R171	ERD16TJ103	10k
R121	ERD10TLJ334	330k	R172	ERD16TJ473	47k
R122	ERD16TJ183	18k	R173	ERD16TJ473	47k
R123	ERD16TJ100	10	R174	ERD16TJ154	150k
R124	ERD16TJ224	220k	R175	ERD16TJ104	100k
R125	ERD16TJ104	100k	R176	ERD16TJ104	100k
R126	ERD16TJ470	47	R177	ERD16TJ104	100k
R127	ERD16TJ680	68	R178	ERD16TLJ224	220k
R128	ERD16TJ103	10k	R179	ERD10TLJ473	47k
R129	ERD16TJ681	68	R180	ERD16TJ473	47k
R130	ERD16TJ224	220k	R181	ERD16TJ102	1k
R131	Not Used		R182	ERD16TJ104	100k
R132	ERD16TJ222	2.2k	R183	ERD16TJ155	1.5M
R133	ERD16TJ560	56	R184	ERD16TJ123	12k
R134	ERD10TLJ102	1k	R185	ERD16TJ473	47k
R135	ERD16TJ822	8.2k	R186	ERD10TLJ392	3.9k
R136	ERD10TLJ822	8.2k	R187	ERD16TJ473	47k
R137	ERD25TJ334	330k	R188	ERD16TJ104	100k
R138	Not Used		R189	Not Used	
R139	ERD16TJ105	1M	R190	ERD16TJ223	22k
R140	ERD16TJ472	4.7k	R191	Not Used	
R141	ERD25TJ563	56k	R193		
R142	ERD10TLJ102	1k	R194	ERD16TJ335	3.3M
R143	ERD10TLJ184	180k	R195	ERD16TJ103	10k
R144	ERD10TLJ104	100k	R196	ERD10TLJ473	47k
R145	ERD16TJ103	10k	R197	ERD16TJ103	10k
R146	ERD10TLJ271	270	R198	ERD16TJ473	47k
R147	ERD16TJ683	68k	R199	ERD16TJ472	4.7k
R148	ERD10TLJ105	1M	R200	ERD10TLJ475	4.7M
R149	ERD10TLJ331	330	R201	ERD16TJ221	220
R150	ERD16TJ681	680	R202	ERD16TJ102	1k
R151	ERD10TLJ684	680k	R203	ERD10TLJ224	220k
R152	ERD16TJ683	68k	R204	ERD10TLJ152	1.5k
R153	ERD16TJ153	15k	R205	ERD10TLJ333	33k
R154	ERD10TLJ473	47k	R206	ERD16TJ104	100k
R155	ERD16TJ221	220	R207	ERD10TLJ103	10k
			R250	ERD10TLJ184	180k
			R301	PQRD250TJ105 (for Deck)	1M

## CAPACITORS

C1	ECQE2105KS	1	C19	ECFD1E153MD	0.015
C2	ECEA1HU100	10	C20	ECFD1E473MD	0.047
C3	ECEA1HUR22	0.22	C21	ECEA1CK101	100 S
C4	ECQM1H822JV	0.0082	C22	ECFD1C683MD	0.068
C5	ECEA1HKS010	1	C23	ECFD1E473MD	0.047
C6	ECKD2H681KB	560P	C24	ECEA1CKS100	10
C7	ECKD2H681KB	560P	C25	ECEA1HKS2R2	22
C8	ECEA1CU221	220	C26	ECFD1E223MD	0.022
C9	ECEA1HKS010	1	C27	ECFD1E153MD	0.015
C10	PQCBC1C103MY	0.01	C28	PQCBC1C103MY	0.01
C11	ECEA1CKS470	47	C29	ECQM1H152JV	0.0015
C12	ECEA0JU331	330	C30	ECQV1H473JZ	0.047
C13	PQCBC1H681KB	680P	C31	ECEA1HKS4R7	4.7
C14	ECEA1HKS3R3	3.3	C32	ECFD1C104MD	0.1
C15	PQCBC1C103MY	0.01	C33	ECEA0JK221	220
C16	PQCBC1C103MY	0.01	C34	ECFD1C104MD	0.1
C17	ECEA1CKS100	10	C35	ECFD1C683MD	0.068
C18	ECFD1C104MD	0.1	C36	ECQV1H473JZ	0.047

Ref. No.	Part No.	Value	Ref. No.	Part No.	Value
C37	ECFD1E473MD	0.047	C80	ECEA1CK101	100 S
C38	PQCBC1C103MY	0.01	C81	ECEA1CKS470	47
C39	ECEA0JK221	220	C82	ECEA0JK221	220
C40	ECFD1E333MD	0.033	C83	PQCBC1H681KB	680P
C41	ECFD1C683MD	0.068	C84	ECEA1CKS100	10
C42	ECFD1E223MD	0.022	C85	PQCBC1C103MY	0.01
C43	ECFD1E473MD	0.047	C86	PQCBC1C332MX	0.0033
C44	ECFD1E683MD	0.068	C87	ECQM1H472JV	0.0047
C45	ECFD1E333MD	0.033	C88	ECQM1H472JV	0.0047
C46	ECEA1HKS010	1	C89	ECFD1C104MD	0.1
C47	ECEA1HKS010	1	C90	ECEA0JK221	220
C48	ECEA1CKS470	47 S	C91	PQCBC1C103MY	0.01
C49	ECEA1HKS4R7	4.7	C92	ECFD1C104MD	0.1
C50	ECFD1E683MD	0.068	C93	ECFD1C104MD	0.1
C51	ECFD1C683MD	0.068	C94	ECFD1C104MD	0.1
C52	ECFD1C104MD	0.1	C95	Not Used	
C53	PQCBC1C682MX	0.0068	C96	PQCBC1H221KB	220P
C54	PQCBC1C103MY	0.01	C97	PQCBC1H221KB	220P
C55	ECFD1E473MD	0.047	C98	ECEA1CKS470	47 S
C56	ECFD1C683MD	0.068	C99	ECFD1E223MD	0.022 S
C57	ECEA0JU331	330	C100	ECEA1HKS010	1
C58	ECFD1E473MD	0.047	C101	ECFD1C104MD	0.1
C59	ECEA1CKS470	47 S	C102	ECEA1CK101	100 S
C60	ECEA1HKS4R7	4.7	C103	PQCBC1C103MY	0.01
C61	ECEA1HKS4R7	4.7	C104	ECEA1HKS3R3	3.3
C62	PQCBC0J153MY	0.015	C105	PQCBC1C103MY	0.01
C63	PQCBX1C222MX	0.0022	C106	ECEA0JU332	3300
C64	ECEA1CKS100	10	C107	ECFD1C104MD	0.1
C65	ECFD1C104MD	0.1	C108	PQCBC1H220JL	22
C66	PQCBC1C103MY	0.01	C109	PQCBC1H240JU	24
C67	ECEA1CKS470	47	C111	PQCBC1H330JL	330
C68	ECEA1CKS470	47	C112	PQCBC1H102KB	0.001
C69	ECEA1HKS4R7	0.47	C113	EECW0HS473Z	0.047
C70	PQCBC1H102KB	0.001	C114	ECFD1E223MD	0.022
C71	ECEA1HKS010	1	C115	ECQM1H103JV	0.01
C72	ECEA1HKS010	1	C116	ECBC1C103MY	0.01
C73	ECEA1AKS330	33 S	C117	PQCBC1C103MY	0.01
C74	ECEA1HKS3R3	0.33			
C75	PQCBX1C103MY	0.01			
C76	PQCBC1H681KB	680P			
C77	ECEA0JKS220	22	C251	ECUV1H102KB	0.001 S
C78	PQCBC1C103MY	0.01	C252	PQCBC1C103MY	0.01
C79	PQCBC1C103MY	0.01	C253	PQCBC1C103MY	0.01
			C254	PQCBC1C103MY	0.01
			C261	ECEA1CK101	100 S

# Automatic Dialing

## ■ Speed Dialing (20 memory stations):

There are 20 memory stations (for Speed Dialing), each station is capable of storing 16 digits.

Each memory station can be accessed by dialing two digits on the dial pad.

## ■ One-Touch Dialing (12 memory stations):

There are 6 Direct Call buttons (for One-Touch Dialing), each Direct Call button consists of two functions, they are **upper** and **lower** memory locations. Each location (Upper + Lower) is capable of storing 16 digits.

### Storing Phone Numbers

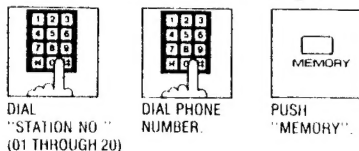
Be sure the handset is on the cradle and SP-PHONE button is off.



2 Storing phone number.

#### ■ Speed dialing

For each station No., dial 2 digits.



#### ■ One-Touch Dialing

Push the Direct Call button instead of dialing the station buttons.

\*In using the Upper memory location;



3 After storing all the numbers,

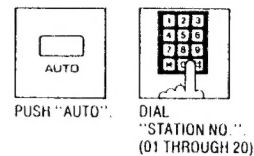


•The Memory Indicator will go out.

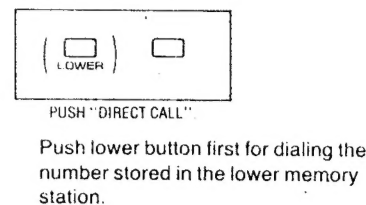
### Automatic Dialing

- 1 Lift the handset or Push SP-PHONE
- 2 Push the buttons as follows:

#### ■ Speed dialing



#### ■ One-Touch Dialing



- 3 When you finish, hang up the handset or In hands-free mode; Push SP-PHONE

### Dialing

#### Using the handset

For manual dialing operation, you can use the handset as it is.

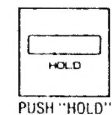
#### Hands-free

- 1 Push SP-PHONE or Dial phone number
  - The Speakerphone Indicator will light.
- 2 Push SP-PHONE WHEN THE CONVERSATION IS COMPLETED.

# Hold

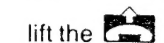
### To Place a Call on Hold

While having a conversation,



### To Release a Hold

- 1 ■ In using the handset
  - If the handset is OFF-hook; PUSH "HOLD" AGAIN.
  - When the handset is on the cradle;



or

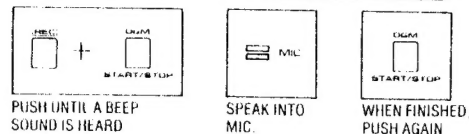
#### ■ In the hands-free mode



2 Start talking.

# OGM Recording (Outgoing Message)

## Recording



## Confirming

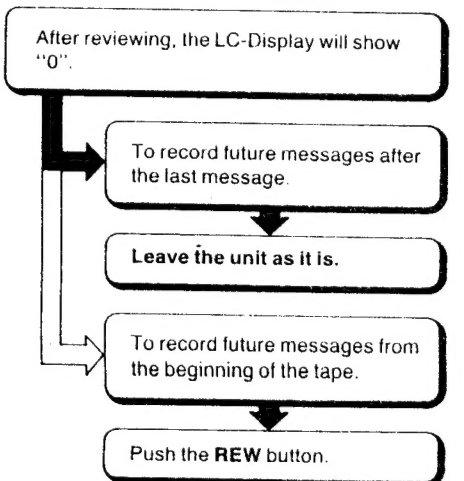


- Push "OGM START/STOP" button.
- The unit will automatically change to the Answer mode after 7 seconds from when the In Use Indicator goes out.

# Prior to Leaving

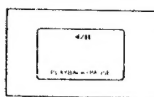
## Preparation

After reviewing the Outgoing or Incoming message the unit will automatically reset itself to the Answer mode and will be ready to answer the next call.



# Listening to Messages

## To Listen to Messages



- Push the "Playback/Pause" button to listen to the recorded messages.

### Auto-Logic (One Touch Operation)

The unit will announce the number of messages received and the ICM tape will automatically rewind and begin to play back. At the end of all the messages "End of final message" will be heard. 7 seconds after "End of final message" is announced the unit will reset back to the Answer mode.

- to rewind the tape.
- to fast forward the tape.

## Voice Time/Day Stamp

When the messages are received, a voice synthesized announcement of the time and day will be recorded on the ICM tape after recording message.

## Recording a Conversation (2-Way Recording)

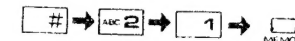
Many States have regulations on the manner in which 2-Way Telephone Conversations may be recorded. Consult your public utility agency.

- 1 Confirm the Answer System On/Off Switch is set to On.
- 2 While having a conversation, until a beep sound is heard.
- 3 When you finish recording, again.

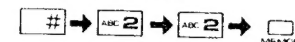
### ■ Programmable Two Way Beep

The recording of two way conversation is illegal in certain States without an audible tone during a recorded conversation. This model has been designed with a programmable feature which allows the instruction or deletion of this in accordance with law.

1. Push the Program button until the Memory Indicator light is on.
2. • To put beeps



### • To put no beeps



3. Push the Program button again.

## Monitoring an Incoming Call

While an Incoming call is being recorded, you can hear it.

- 1 Adjust the Volume Control.

## Message Memo

You may record a confidential message any time at home on the ICM tape. It can be heard by people who know the Code No.

- 1 until a beep sound is heard.
- 2 Speak into the .
- 3 When finished, .

## Erasing the Recorded Messages

- Push "REC" button, while holding it, push "FF" or "REW" button until a beep sound is heard.
- The messages are erased while rewinding or fast forwarding.



# How to Operate from Remote Phone

You can retrieve the recorded Incoming messages from a remote location with tone telephone. Remote operation is simplified by a **synthesized voice** that offers you options over the telephone.

## To Store the Remote Code Number

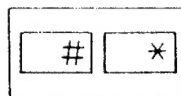
Before operation, choose a one-digit through three-digit remote code number and store it in memory.

**Example: 358**

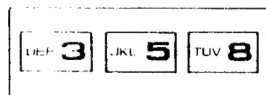
**Be sure the handset is on the cradle and the SP-PHONE button is off.**



PUSH "PROG" UNTIL MEMORY INDICATOR LIGHT IS ON



PUSH "# \* " FOR INITIAL SETTING.



PUSH "358"



PUSH "MEMORY"



PUSH "PROG"

■ You can set it from "1" to "999".

## Remote Synthesized Voice Instruction (Voice Menu)

The synthesized voice will give you the direction how to operate your unit from a remote location using a tone telephone.

You can easily play back the received messages, re-record the OGM, or record "Marker Message" etc., according to the unit "Voice Menu" without any manuals.

To operate the unit directly skipping the order of the Voice Menu, see page 17.

**Example:**

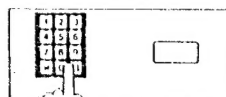
**Playing back the received messages.**

- 1) Call your unit.
- 2) Push your **Remote Code No.** during the OGM playback.
  - The voice will tell you how many messages you have received.
- 3) After 5 seconds, the voice will say: **"Please push 1 for Play Back. Please push 2 for another function"**.
- 4) Push the "1" to play back the received messages.
  - The unit will play back all the recorded messages.

## Voice Memo Check



PUSH "VOICE MEMO CHECK"



DIAL "STATION NO." OR "DIRECT CALL"

- The unit will announce the stored phone number.

# Transferring the Incoming Messages

## Message Transfer

If a phone number is stored into the transfer station and the unit is set to the transfer mode, each time the ICM is recorded, the unit will automatically dial the number to which the ICM is to be transferred.

## To Listen to the Transferred ICM

Each time ICM is recorded, the unit will automatically dial the phone number to which the ICM is transferred.



LIFT THE HANDSET AFTER RINGING.



PUSH CODE NO. DURING THE OGM

## Storing the Transfer Number

Store the phone number to which you want to transfer the ICM into the transfer station.



PUSH "PROG" UNTIL MEMORY INDICATOR LIGHT IS ON



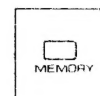
PUSH "LOWER"



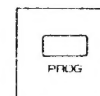
PUSH "TRANSFER" (STATION BUTTON NUMBER 1)



DIAL PHONE NUMBER



PUSH "MEMORY"



PUSH "PROG"

Lower button must be pushed at first.

## Setting the Transfer Mode

Make sure the transfer number is stored.



PUSH "LOWER"



PUSH "TRANSFER"

- The Transfer Indicator will light
- To cancel, repeat above procedure. Transfer Indicator will go out.

Wait for 5 seconds after you hear the announcement of the number of recorded messages, the unit will go into the "Voice Menu" mode.

- If you push the "4" right after you hear the announcement of the number of recorded messages within 5 seconds, the unit will play back the newly recorded messages at once.
- If the transferred number is busy, the unit will redial up to 15 times within a 10-minute period.
- If no one pick up the handset, the line will be terminated after 1 minute. Then the unit will redial once after 1 minute.